Long-term Benefits of Extracurricular Activities on Socioeconomic Outcomes and Their Trends in 1988-2012

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Keywords: Extracurricular Activities, Socioeconomic Outcomes, NELS: 88, ELS: 2002, Generalized Linear Models

Abstract

Across the country, budget cuts to education have resulted in decreased funds available for extracurricular activities. This trend in policy may have a significant impact on future outcomes, as reflected in student success measures. Using two datasets that were collected over the last two decades, in the present study, the researcher assessed the relationship between participation in extracurricular activities and the future socioeconomic outcomes in respondents' lives, including post-secondary education, full-time employment status, and income. Two existing large-scale longitudinal studies of the U.S. secondary students, i.e., the National Education Longitudinal Study of 1988 (NELS: 88) and the Education Longitudinal Study of 2002 (ELS: 2002), served as data sources. As these surveys were conducted about a decade apart, the information they yielded was suitable for meeting the study aims. Generalized linear models, such as multiple regression and logistic regression analyses, by applying sample weights, were performed to examine the impacts of extracurricular activity participation on the aforementioned outcome measures. The implications of the study findings, including the comparison of the results from two different datasets collected at different time points, were interpreted with respect to school budget policy. Results from the NELS: 88 and ELS: 2002 were also compared to evaluate the trends in the characteristics and performance of U.S. high school students during the 1988-2012 period.

Keywords: Extracurricular Activities, Socioeconomic Outcomes, NELS: 88, ELS: 2002, Generalized Linear Models

Dedication

I dedicate this dissertation to my uncle, Carl Francis Long Jr, and my aunt, Charlotte M. Harris. If it were not for their sacrifice of taking me in from childhood, and their understanding that I needed love, being there when I fell from grace, picking me back up when I could not stand, and for raising me as if I was their own, I would have never been granted the opportunities that I had. I honor my uncle's memory by finishing what I started, no matter the obstacles. I honor my aunt by living by his example.

I may not have been the perfect child, far from it, but they still loved me for who I was. As I grew older, I understood why they guided me through life with a short leash. There were always there for me, whether I was in need, in pain or lost and needed their loving care and guidance. My love for them is eternal, just like my cherished memories of my time with them.

I also dedicate this dissertation to the love of my life, my wife, Jill. Without her support, I would never have completed this work. Her desire to see me succeed, her ability to love me for who I am, and her determination to stand by me when a lesser woman would have not, is the reason that I am able to write these words.

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Chapter I: Introduction

Background of the Problem

School budgets are designed to "plan for the upcoming year as related to anticipated revenues and expenditures" (Ellerson, 2011, p. 2). It is critical for school districts to plan the allocation of funds for instruction, transportation, health and safety, and library and counseling services, among other categories. School budgets are funded by local government (approximately 43.9%), state government (47.6%), and the federal government (8.5%) (Ellerson, 2011, p. 3). The conditions of these different levels of economy, therefore, have a profound impact on the amount of funds available for different educational components.

The Unites States experienced a profound recession, beginning in December 2007, adversely affecting numerous aspects of the government and economy (Business Cycle Dating Committee, 2008). Increase in unemployment was significant during the following three years, as more than 8.7 million jobs were eliminated (Temin, 2010). The unemployment rate reached its peak at 10.2% in October of 2009 (Bureau of Labor Statistics, 2015). The gross domestic product (GDP) decreased by 5.1% and the housing and stock markets experienced considerable declines. Educational funding was also substantially reduced during the economic downturn.

Even several years post-recession, public schools are spending markedly less per student than they did before the recession, according to Leachman and Mai (2014), from the Center on Budget and Policy Priorities. The authors noted that at least 35 U.S. states had less educational funding for the 2013-2014 school year as compared to the pre-recession levels. In 14 of those 35 states, budgets have been cut by at least 10%, while Alabama and Oklahoma were forced to reduce funding for education by more than 20 percent from pre-recession levels. An increase in tax revenue had little effect in at least 15 states, as spending for education still declined. In some

cases, educational funding increased rather than continuing to decrease, once the recession ended; however, the increase was still insufficient to reach pre-recession levels. This was the case in New Mexico, as the state increased "school funding by $72 per pupil this year (2014). But that is too small to offset the state's $946 per pupil cut over the previous five years" (Leachman & Mai, 2014, p. 1).

Many states are hesitant to increase taxes, which eliminates a potential source for educational funding. Yet, even when tax revenue is increased, it appears to have little effect, as mentioned previously. State income (and subsequent income tax) and overall spending (and associated sales tax) levels diminished during the recession, to the detriment of school budgets, since nearly 44% of educational funding comes from state resources. For example, Kansas began the year 2015 with a budget deficit partially caused by extreme tax cuts; the proposed solution to recovering from the shortfall included a $45 million cut to educational funding (Richinick, 2015). The percentage of the state budget allocated for funding public schools in North Carolina was 15.2% less in the 2013-2014 school year than it was 40 years prior ("Highlights of the North Carolina Public School Budget," 2014). In addition, state funding is also insufficient to cover the costs of education because the unemployment rate reached its highest ever level during the recession and has been very slow to recover. Similarly, housing values remain low and have only recently started to increase. Gaps in educational funding are also affected by the overall rise in the cost of education. According to the National Center for Educational Statistics (2015), expenses per student increased by 11% from the 2000-01 to the 2011-12 school year. Moreover, there are over 775,000 more K-12 students than there were prior to the recession of 2007. This marked increase in student population means that funds that are already insufficient have to be spread further, which leads to increased class sizes and fewer

available student services. Another cause of decreased educational funding is that the federal subsidies provided by the State Fiscal Stabilization Fund component of the American Recovery and Reinvestment Act of 2009, used to cover state shortfalls, expired in 2011. As a result of the abolishment of additional federal relief, many states are having difficulty compensating for this shortfall in funds, leading to substantial decreases in education funding beginning in 2012 (Leachman & Mai, 2014, pp. 6-7). The decrease in funding available for education has had a negative impact on many facets of the education system, including the inability to recruit high-quality educators, because salaries and supplemental wages have become less competitive. Retention and development of these educators is also negatively affected by budget cuts. As class sizes inevitably grow as a result of fewer teachers, this is likely to have an adverse effect on student achievement. Cuts to "expanded learning time," such as summer school and after-school programs, are among other negative effects of decreased educational funding. Similarly, pre-kindergarten programs such as Head Start have been cut, creating a void in early education, particularly among low-income families (Leachman & Mai, 2014, p. 8).

One recent case in which proposed school budget cuts are likely to affect multiple facets of the educational experience is occurring in northern Virginia, where Fairfax County Public Schools, one of the country's largest school districts, is facing a potentially overwhelming shortfall, up to $100 million, for fiscal year 2017 (Balingit, 2015). Proposed changes to this school system's budget include eliminating preschool, increasing class sizes, and reversing the delayed start time for high schools, despite the well-established evidence that changes such as these could adversely affect students' development and well-being. The main, and likely the most controversial, cut proposed in Fairfax County pertains to extracurricular activities, both

athletic and non-athletic. Benefits of participation in extracurricular activities are numerous, as will be discussed in the following section.

Statement of the Problem

The budget for extracurricular activities, such as athletics, academic/hobby clubs, and the arts, is one area that has experienced substantial cuts as a result of overall cuts to educational funding. Public schools across the United States needed to decrease or eliminate money allocated for extracurricular activities in order to increase or supplement financial support for academics (Kronholz, 2012). Cuts to school personnel also adversely affect extracurricular activities in terms of staffing (Zimmerman, 2013). School administrators and policymakers are decreasing spending for athletic competitions, funding for academic and hobby clubs, the promotion of the arts (drama, band, chorus, etc.), or removing these activities from their schools and districts altogether (Kronholz, 2012). This nationwide trend has gathered support, as seen in the following statement made by Gary Sanford, an American professor teaching in Sweden, in 2012, "because you could never definitively determine if school budgets truly allowed for fiscally sound sports programs without taxing academics through all the administrative hoodwinking, extracurricular sports programs should not be in public schools period" (Sanford, 2012). Schools in Eagan, MN, were forced to cut their extracurricular activities budget in 2009 in order to "leave core subjects intact" (Fitzgerald, 2009). This decision was made despite the fact that student-athletes' average GPA was 2.84 compared to the 2.68 of their nonparticipating peers. In 2010, the Neoga, IL, public school district planned to cut their budget for extracurricular activities by 10%, justifying this decision by stating that they receive only 90% of their due funds from the state (Bilharz, 2013). However, this is not an isolated case, as "almost half (48 percent)" of schools in California have made cuts to arts, music, and drama programs

(Dev, 2010). Some school districts, including numerous districts in Virginia and New Jersey, have opted to institute a "pay to play policy," which requires families to pay a fee for their children to participate in extracurricular activities (Associated Press, 2010). In some cases, students are required to pay for each activity in which they participate, which may be prohibitively expensive for those who take part in multiple sports or activities.

Budget cuts to extracurricular activities in United States public schools are likely to have negative consequences in light of the many well-known benefits those activities yield. However, there is evident paucity of rigorous scientific studies that explored this relationship, and especially long-term benefits of participation, by employing nationally representative large-scale data. In addition to participation in athletics and other activities encouraging students to attend and stay in school, these activities provide "leadership for the administration of education-based interscholastic activities, which support academic achievement [and] good citizenship . . . and believe . . . participation in education-based activity programs promotes student academic achievement, enriches each student's educational experience, and develops good citizenship and healthy lifestyles" (National Federation of State High School Associations, 2011). Participation in athletics in particular has a significant positive effect on student life, both academically and affectively (Edmonds, 1981). Students without an outlet of athletics are at a greater risk of dropping out, being disruptive, and failing to strive for post-high school educational opportunities (McMillan & Reed, 2010). The 2012 National Collegiate Athletic Association (NCAA) Graduation-Success Rate (GSR) Report stated that student athletes had a 65% college graduation rate, as compared with the Federal Graduation Rate (FGR) of 63% (National Collegiate Athletic Association Research Staff, 2013). This statistic supports the traditional argument of proponents for funding athletics and sports programs.

Benefits to participation in extracurricular activities are not limited to academic success only. According to Daniel Gould, professor of Applied Sports Psychology at Michigan State University, benefits are numerous:

> Not only are school sports justified on educational grounds, but researchers have shown that participation in them and other extracurricular activities have positive effects on adolescents. For example, a multiyear study conducted in Michigan has shown that children who participate in sport have increased educational aspirations, closer ties to school and increased occupational aspirations in youth. It has been demonstrated, then, that school sports participation has a number of desirable benefits. (Gould, 2010)

Numerous literature sources reveal that participation in extracurricular activities may foster development of a wide variety of traits that contribute to student success, both in the classroom and in their future work and social lives. For example, participation in athletics can allow a student to develop positive characteristics, including rigor, teamwork, problem solving, self-esteem, and self-efficacy (Treasure, Monson, & Lox, 1996). One of the most notable benefits students can attain from extracurricular activity participation is the building of self-concept and an understanding of locus of control, which are two important qualities that contribute to high self-efficacy[1] (Bong & Skaalvik, 2003).

Further, Winner, and Hetland (2008) stated that "arts programs teach a specific set of thinking skills rarely addressed elsewhere in the curriculum . . . . As schools increasingly shape their classes to produce high test scores, many life skills not measured by tests just don't get taught" (2008, p. 1). Self-criticism, experimentation, and self-reflection, among other essential life skills, are all developed through participation in arts programs. However, since there is

[1] Self-efficacy is defined as the strength of one's belief in one's own ability to complete tasks and reach goals. It plays an important role in academic achievement, athletic competition, and everyday life. While building higher self-efficacy can be difficult, evidence suggests that having a history of success, listening to encouragement, and setting reasonable goals are some of the ways to develop self-efficacy (Bandura, 1977).

currently no standardized test to measure the effect of these skills on students, there is little quantifiable justification for maintaining funding for these programs.

Purpose of the Study

The decision of many school districts to reallocate resources to academics by forgoing funds used for extracurricular activities was prompted by the sluggish American economy in the mid- to late 2000s. Even though the outcome of the present study may not alter this trend, it is worthwhile to evaluate pros and cons of this nationwide practice by using the two nationally representative datasets collected during 1988-2012. This information allowed examining the associations between extracurricular activity participation and socioeconomic outcomes at age 26, as evidence of the repercussions that may arise in the near future. Specifically, the reason for choosing the socioeconomic outcomes at age 26 is that, to the best of the author's knowledge, only a few studies have previously addressed these outcomes. In addition, the available research in this field typically focused on more immediate outcomes, such as high school achievement, GPA, graduation rates, etc. Further, comparisons of the results pertaining to NELS: 88 and ELS: 2002 to understand the trends has never been attempted. By filling this void in the literature, the author will contribute to improving U.S. secondary education.

The results yielded by the two preliminary studies conducted by the author of this thesis, and the literature reviewed, led to the hypothesis that extracurricular activities (split into three groups, namely athletics, academic/hobby clubs, and the arts) have a positive effect on life success measures, such as highest level of education obtained, employment status, and level of income. In order to test this hypothesis, the author posited the following five research questions:

1. Do extracurricular activities have positive association with the pursuit of higher education, and to what extent, after controlling for the student's background and his/her middle/high school experience?
2. How is participation in extracurricular activities associated with a student's long-term employment status, after controlling for the student's background and his/her middle/high school experience?
3. How is participation in extracurricular activities associated with a student's long-term income, after controlling for the student's background and his/her middle/high school experience?
4. What are the differences in the associations of athletics, academic/hobby clubs, and the arts with the long-term success of students?
5. Are results from the NELS: 88 comparable to those found in the ELS: 2002 dataset, using similar variables that measure the same construct?

Significance of the Study

School districts and policymakers tend to concentrate on standardized tests, budget cuts, and teacher salaries. Prior to commencing this study, the researcher anticipated that students' capability to develop their full potential and fulfill their life goals would be compromised as cuts to funding for extracurricular activities continue. More specifically, if the author's hypothesis is supported, these activities have a key function in the development of students as human beings and promotion of long-term success through participation (Stearns & Glennie, 2010).

The present study contributes distinctive knowledge to the current literature regarding both long-term effects of participation in extracurricular activities and the stability of those effects. More specifically, in using the data derived from the National Education Longitudinal

Study of 1988 and Education Longitudinal Study of 2002, if trends found in both datasets are comparable, this will indicate presence of sustainable patterns. This is particularly important given that the extensive literature review failed to locate any previous studies in which both datasets were used in conjunction in order to respond to the study's research questions.

Scope of the Study – Research Design

The datasets used in this study, National Education Longitudinal Study of 1988 (NELS: 88) and Education Longitudinal Study of 2002 (ELS: 2002), both examined students at the 10th grade, 12th grade, and eight years following high school graduation, while the NELS: 88 dataset also included an 8th grade observation. The researcher used three or four time points, depending on the scope of the dataset, to evaluate if high school students' participation in extracurricular activities, if any, had an effect on their post-secondary education, income, and employment status in the last wave of the data collection, when the study participants reached age 26, corresponding to 2000 for NELS: 88, and 2012 for ELS: 2002.

In the present study, the researcher controlled for students' background information, including race/ethnicity, gender, and socioeconomic status (SES). Adjusting for gender was necessary, since female students tend to participate in non-athletic extracurricular activities more frequently than in sports (Mahoney, Vandell, Simpkins, & Zarrett, 2009). The present study also controlled for race because prior research has indicated that Hispanic and Asian students participate in extracurricular activities less frequently than do their White and Black classmates, while participation rates among White versus Black students are inconsistent (Fredricks, 2012, p. 299). Similarly, socioeconomic status is predictive of extracurricular activity involvement, as students from families with higher SES tend to participate more than do students from families with lower SES (Mahoney et al., 2009).

The current study also controlled for prior academic achievement, behavioral problems, and parental monitoring. Prior academic achievement can be predictive of academic outcomes (Camacho & Fuligni, 2015, p. 1254), which are major predictors of obtaining post-secondary education (Kronholz, 2012). Behavioral problems in high school have been found to be associated with academic achievement (Smith-Adcock, Lee, Kerpelman, Majuta, & Young, 2013, p. 202). Parental monitoring has also been established as a variable that is closely related to student academic achievement (Lowe & Dotterer, 2013, p. 1414). All these variables have documented associations with educational outcomes (and were the control variables in Gardner, Roth, and Brooks-Gunn's (2008) study) and extracurricular activity participation, and the researcher speculated that these factors are also associated with employment and income outcomes.

Limitations

The main limitation in the present study stemmed from the subtle differences in constituent content of the two datasets, making it difficult to form study variables. Parental monitoring, for example, was addressed through only one question in the NELS: 88 dataset, but was accorded three questions in ELS: 2002. In addition, prior academic achievement in math and reading was not reported throughout all waves of both datasets. For example, in ELS: 2002, the first wave (10th grade) included math and reading scores; however, in the second wave (12th grade), only math achievement tests were administered. Consequently, the implications of the results yielded by the analyses performed in the present study could potentially be slightly different, since the NELS: 88 dataset comprised of three waves of data collection, while only two waves were included in the ELS: 2002 dataset.

Summary

The aim of this study was to contribute to the existing literature of the long-term benefits of participation in extracurricular activities on socioeconomic outcomes, in addition to examining the stability of the results yielded by the NELS: 88 and the ELS: 2002 datasets. Both aims are of vital importance for the wellbeing and prosperity of the nation's youth, yet are not presently being addressed in the social sciences research and practice. Thus, the present study, which is multi-faceted in nature, is unique in both design and purpose.

Chapter II: Literature Review

The literature reviewed in this chapter focused on the implications, both positive and negative, of participation in school-sponsored extracurricular activities for future outcomes. The present study examined three categories of extracurricular activities, namely athletics, academic and hobby clubs, and the arts. In the context of this research, athletics comprised both interscholastic and intramural sports, including team and individual activities. Academic and hobby clubs were defined as activities sponsored by the school that focus on academic or intellectual activities (such as National Honor Society and debate), pre-professional pursuits (such as Future Farmers of America and Future Teachers of America), and special interests or hobbies (such as chess and photography). Finally, the arts encompassed music, both vocal and instrumental, and the performing arts, including school plays and musicals. All of these extracurricular activities are considered to have varied benefits to participants in multiple aspects and phases of human life. One way to summarize such a complex phenomenon that can extend to many facets of human life is to look at the outcomes that occur at each stage of one's life cycle, from school age to adulthood. During high school, some students may drop out while others graduate. Subsequently, some adolescents may seek employment, while others go to college or professional school. Upon graduation, they will get a job and become productive adults. Given that paths individuals take as they progress through life vary, it is necessary to introduce a time dimension, in order to identify short- vs. long-term outcomes of educational choices and attainment. The short-term outcomes are those that can be observed during high school years or in a relatively short period of time after high school that mostly occur within schooling contexts. This type of outcome includes academic achievements, such as mathematics and reading, high school completion, motivation, aspirations, engagement, belonging,

personality and character development, social skills, etc. The long-term outcomes are those that are relatively distal in time and can be observed after a few or several years post-high school, and they appear in the context of adult life, i.e., life as a member of society. This type of outcome includes post-secondary educational attainment, employment status, income, interpersonal and communication skills, professionalism, collegiality, maturity of personality and character, citizenship, etc. Clearly, within each category, some outcomes (e.g., academic achievements, high school completion, level of post-secondary educational attainment, employment status, and income) are explicit and visible, direct, and relatively straightforward to measure directly and objectively. On the other hand, some are not quite as explicit and are not straightforward to measure objectively (e.g., motivation, aspirations, engagement, belonging, personality, and character development). Therefore, the literature reviewed in the subsequent sections will be presented in the order of the timeline, commencing with short-term/immediate outcomes followed by long-term distal outcomes. Within each category, the relevant outcomes (including the explicit and inexplicit ones) will be discussed. The remainder of this chapter is organized as follows:

1. Short-term benefits of extracurricular activity participation
2. Long-term benefits extracurricular activity participation
3. Summary

Short-Term Benefits of Extracurricular Activity Participation

Review of extant literature has revealed that short-term outcomes, especially explicit ones such as academic achievement, high school completion versus dropout rates, delinquency, etc., have been extensively studied. Multiple studies in the past few decades examined the relationship between extracurricular activity participation and academic achievement (Darling,

Caldwell, & Smith, 2005) (Broh, 2002) (Eitle & Eitle, 2002) (Darling et al., 2005; Eccles & Barber, 1999), work ethic in academics (Marsh & Kleitman, 2002), and motivation concerning school and academics (Darling et al., 2005) (Eccles & Barber, 1999) (Rees & Sabia, 2010). These reports asserted that academic achievement could be predicted based on participation in extracurricular activity. Some authors even explored the effects of specific activities and frequency of participation. Although Eitle and Eitle (2002) discovered that students who participated in football and basketball were more likely to have lower scores on measures of academic achievement, other researchers (Rees & Sabia, 2010) ascertained that participation in athletics predicted better grades, which were found to improve even when frequency of participation increased.

Lipscomb (2007) used a fixed-effects model to study the relationship between participation in school-sponsored extracurricular activities and academic achievement to establish if any "immediate return" comes from participation. Lipscomb concluded that participation in sports was linked to a gain of approximately 2% in math and science scores and a 5% increase in completion of a Bachelor's degree. Although Lipscomb's study controlled for gender and race, race was a dichotomous variable, expressed as either white or nonwhite only. When studying the link between participation in extracurricular activities and academic achievement, the author included numerous other covariates in his analysis, such as marital status of student's parents, if student had experienced the death of a parent, the composition of the student's community, if the student was attending a public versus private school, SES of the student and his/her family, the frequency with which the student skipped classes, how much homework the student was assigned, and the number of hours the student spent watching

television throughout the week. In addition to participation in athletics, Lipscomb examined participation in club and other non-athletic groups, as was done in the present study.

Shulruf, Tumen, and Tolley (2008) studied the importance of extracurricular activities and developed a structure for research to evaluate causal effects of school-sponsored extracurricular activities on academic achievement and student outlooks.[2] They also concluded that students who participated in team sports (but not individual sports or non-athletic activities) had improved literacy scores.

Marsh and Kleitman (2002) concluded that, when students participated in extracurricular activities, they tended to develop loftier ambitions for pursuing higher education and establishing careers than did nonparticipants. Specifically, participation in extracurricular activities had a positive relationship with the pursuit of higher education, as measured two years after high school (Fredricks, 2012) (Gardner et al., 2008).

Guest and McRee (2009) examined the relationship between extracurricular activities and delinquency and depression among students. In their analysis, the authors assigned a value of 1 for participants and 0 for nonparticipants. They also further classified extracurricular activities into the categories, comprising of sports (baseball/softball, basketball, field hockey, football, ice hockey, soccer, swimming, tennis, track, volleyball, wrestling, other sport), arts (drama, band, cheer/dance, chorus/choir, orchestra), and academic organizations (book club, computer, future farmers, history, science, newspaper, honor society, student council, yearbook). The

[2] Causal effects (Abramson, 2001) comprised the following characteristics: "strength of association (e.g. correlation); level of significance; temporality (the causal effect precedes the outcome); specificity (the effect is related specifically to the causal factor); and consistency (the results are consistent across different populations and circumstances). These criteria are used predominantly in population health studies, but they are also applicable to most other social sciences research" (Shulruf et al., 2008, p. 420).

investigators discovered that, even though those that took part in various extracurricular activities displayed different tendencies toward delinquency and depression, the distribution of these phenomena in all extracurricular activities as a whole was near normal. This result suggested that, depending on their type, extracurricular activities could have positive, neutral, or negative effects on students' levels of delinquency and depression.

Benefits of participating in extracurricular activities are not limited to explicit outcomes and may be more extensive than solely increasing test scores and enhancing academic achievement (Kort-Butler, 2012, p. 13). Extracurricular activity involvement can lead to a "significantly higher academic self-concept, which in turn influence[s] other educationally relevant outcomes (e.g., GPA, time spent on homework, taking advanced courses, etc.)" (Marsh, 1992). Participation not only influences academic outcomes but also positively affects students' psychological state and emotional well-being (Mahoney, Larson, & Eccles, 2005). In addition, involvement in extracurricular activities contributes to self-identification and improved life satisfaction. As a result, participants develop an increased appreciation for and experience of their classroom education as compared to their peers who do not participate in extracurricular activities (Huebner, 2004).

Further, some argue that the five elements of personality traits (agreeableness, conscientiousness, extraversion, neuroticism, and openness) can be developed into the positive directions that lead to success in life and enhanced by extracurricular activity participation. For example, Covay and Carbonaro (2010), Troutman and Dufur (2007), and Zaff, Moore, Papillo, and Williams (2003) indicated that the structure of extracurricular activities promotes enhancement of these personality characteristics.

Another benefit of extracurricular activity participation encompasses further development of more intangible characteristics that are introduced in the classroom. Covay and Carbonaro (2010) concluded that benefits of extracurricular activities parallel positive values acquired in the classroom setting, which include achievement, independence, specificity, and universalism (Dreeben, 1968). The authors maintained that these values were also fostered through participation in extracurricular activities, since participants were assessed on skill sets, ability to deal with both successes and failures during competition, propensity to cultivate a greater capacity for work, and ability to adapt to different roles.

The team or group culture with which participants of extracurricular activities become familiar could give these students an advantage over their nonparticipating peers in the classroom with group projects and activities. Empirical evidence indicates that participation in extracurricular activities leads to a better developed sense of leadership and cooperation, and these skills may transfer readily to similar activities in the classroom. For example, Fletcher, Nickerson, and Wright (2003) asserted that participants in both athletic and non-athletic extracurricular activities were likely to have better developed interpersonal skills than their nonparticipating counterparts, as perceived by their teachers. These relational proficiencies are advantageous for developing enduring achievement and success, and could therefore serve as evidence of important benefits of participating in extracurricular activities.

Participation in extracurricular activities has also been shown to have a positive effect on development of interpersonal skills and professionalism. For example, Jamal (2012) studied the effect of outside-of-class activities, such as career days, research days, patient-centered activities, and community-centered services on medical students. The author reported that participation in these activities fostered improved teamwork and decision-making skills in medical students.

Students' academic achievement also benefitted from additional professional responsibilities and sharing tasks with classmates. Further benefits established in this study were improved time management and increased awareness of the need for commitment and punctuality (Jamal, 2012).

Participation in extracurricular activities encourages students to develop relationships, engage in a "spontaneous, more casual, less prescribed way of learning," and acquire skills needed for future, long-term success in adulthood (Rivera, 2012). Because the extracurricular activity atmosphere tends to be more informal, participants may be able to develop creativity, independent thinking, and other similar attributes that the classroom environment may not foster well. Development of these abilities is essential for success in everyday life. For example, participation in athletics can positively influence student development and may allow beneficial skills and knowledge gained through athletics to be applied to life in adulthood (Rivera, 2012).

Another notable result of participation in extracurricular activities is the effect that involvement has on life satisfaction and social interest. When evaluating the relationships among participation, contentment with life, and social interest, greater participation in extracurricular activities and high social interest were found to be significantly related to higher levels of overall satisfaction. However, when the specific relationship between social interest and actual participation in extracurricular activities was examined, the association was determined to be "negligible" (Gilman, 2001). This lack of significance in the relationship was one case in which participation in extracurricular activities did not exhibit positive effects.

Although the preponderance of evidence suggests that extracurricular activity involvement has positive benefits for participants, authors of a few studies also discussed negative effects of participation. For example, spending excessive amounts of time engaging in

extracurricular activity, or being involved with too many different activities, can lead to "over intensity," also known as "over scheduling" (Fredricks, 2012). Generally, involvement exceeding five to seven different activities, and/or 14 or more hours of participation weekly, is considered excessive, irrespective of activity type (Gardner et al., 2008). Too much time dedicated to too many activities can translate to decreased academic performance, possibly through, among other factors, tiredness and insufficient time in the student's day remaining to complete homework assignments and prepare for upcoming classes (Fredricks, 2012).

In line with the above, Melman, Little, and Akin-Little (2007) determined that excessive participation in extracurricular activities can have an adverse effect on the amount of sleep high school students can attain. This finding is significant, as sleep deprivation is well known to have negative consequences for human health, especially in adolescence, as it leads to tiredness and disruptions to one's mood and emotional state (Dahl, 1999). In addition, although participation in athletics was found to decrease the likelihood of students using cocaine or marijuana, it could lead to more frequent use of alcohol among high school athletes, regardless of gender (Eccles, Barber, Stone, & Hunt, 2003). Hoffmann (2006) argued that increased use of alcohol among athletes, as compared to non-athletes, was likely due to the increased sociability of the high school athletics culture. On the other hand, students participating in non-athletic extracurricular activities only, "may not be as involved in social environments or with peer groups that encourage alcohol use" (p. 3). Benefits of extracurricular activity participation extend to post-secondary outcome measures as well, and will be discussed in the following section.

Long-Term Benefits of Extracurricular Activity Participation

Prior studies using the NELS: 88 dataset to determine the effect of participation in extracurricular activities on long-term outcome measures revealed several benefits to

participation. Many of these studies, however, examined small, specific segments of the population. For example, Troutman and Dufur (2007) analyzed participation of female high school athletes (N = 5,103) and determined that they were 73% more likely to attain a college degree than were females who did not participate in athletics while in high school. This finding is important, because it gives a strong evidence of the benefit of participation in extracurricular activities, specifically athletics. A different longitudinal analysis that used the NELS: 88 dataset (N = 7,656) established that students who participated in both athletics and academic clubs were more likely than their nonparticipating peers to earn high income and complete a higher level of education eight years after graduating from high school (Lleras, 2008).

Benefits of participation in extracurricular activities that are apparent in adulthood include both social development and civic responsibility (Shulruf et al., 2008, p. 420). Zaff et al. (2003) used the NELS: 88 dataset to examine how participation in extracurricular activities affected academic achievement, voting behavior, and volunteering measured at age 26. The researchers controlled for SES, race, gender, family structure, number of siblings, and reading and math IRT scores. They designed a dichotomous variable of either participation or non-participation and included both athletic and non-athletic extracurricular activities in their study. The data was subjected to multivariate analysis, controlling for the aforementioned covariates. The researchers established that participation in extracurricular activities had a positive effect on lowering high-school dropout rates, encouraging participation in civic activities, improving academic achievement, promoting self-efficacy and self-confidence, and cultivating social relationships with peers and mentors.

Gardner et al. (2008) used the NELS: 88 dataset to determine the relationships that sponsorship of an extracurricular activity (whether the activity was school-sponsored or

community-sponsored) had with both how long and how often a student participated in the activity. The authors also assessed the impacts these variables had on future higher education achievement, civic involvement, and occupational outcome measures. They examined extracurricular activity participation data in 10th and 12th grade and subsequent, post-secondary educational and occupational outcomes at the two-year and eight-year post-high school time points. The findings revealed that students who participated in school-sponsored extracurricular activities had more favorable results on the study's post-secondary measures than did students who engaged in community-sponsored activities. In addition, students who participated in either type of activity in both 10th and 12th grade had better post-secondary outcomes than did students who participated for only one year or who did not participate at all. Finally, students who participated in extracurricular activities more often and those who spent more time involved in these activities (up to 9 hours per week) were more likely to attend college and complete at least a four-year post-secondary degree program, volunteer in the community, vote, attain full-time employment, and have higher income, as compared to students that participated less often or those did not participate at all.

Summary

The author in the current study focused on the long-term explicit outcomes of post-secondary education, full-time employment status, and income, because these measures are objective and the required data was available in both datasets employed as data sources for the study. While the more intangible measures discussed above are equally important, they are difficult to measure objectively and are thus beyond the scope of the present investigation. Using longitudinal data from both the NELS: 88 and ELS: 2002 datasets, the researcher empirically investigated whether students would gain any benefits from extracurricular activity

participation. Pertinent findings were obtained by examining the associations between extracurricular activity participation during high school (and middle school in the case of the NELS: 88) and subsequent post-secondary achievement measures of socioeconomic outcomes, such as education attainment, employment, and income. The author also examined whether the nature and the strength of the associations were similar for two cohorts of subjects that were 14 years apart by comparing the results of the two large-scale U.S. nationally representative data sets.

Thus, to reiterate, the research questions addressed in the current study were:

1. Do extracurricular activities have positive association with the pursuit of higher education, and to what extent, after controlling for the student's background and his/her middle/high school experience?
2. How is participation in extracurricular activities associated with a student's long-term employment status, after controlling for the student's background and his/her middle/high school experience?
3. How is participation in extracurricular activities associated with a student's long-term income, after controlling for the student's background and his/her middle/high school experience?
4. What are the differences in the associations of athletics, academic/hobby clubs, and the arts with the long-term success of students?
5. Are results from the NELS: 88 comparable to those found in the ELS: 2002 dataset, using similar variables that measure the same construct?

Answering the above research questions not only benefits the research communities by providing the empirical evidence on the nature of the associations between extracurricular

activities and the long-term outcomes, but also by providing the knowledge base about the relationship to practitioners, policymakers, students and families, and the general public. Further, as mentioned in the introduction, the results of the present study would reveal the potential consequences of the recent cuts in the funding dedicated to and the availability of extracurricular activities across the U.S. school districts, suggesting the course of action we might need to take.

Chapter III: Methodology

This chapter provides description of the datasets employed in the present study, the variables of interest, and the analytic strategies used to provide answers to the research questions stated in the previous chapters. In order to meet the study objectives, the datasets were subjected to statistical analyses. The datasets analyzed in the present study were derived from the National Education Longitudinal Study of 1988 (NELS: 88) and the Education Longitudinal Study of 2002 (ELS: 2002), sponsored by the National Center for Educational Statistics (NCES) (National Center for Educational Statistics, 1990, 2004). The information used in this study came from the four bi-annual collections for the NELS: 88 in 1988, 1990, 1992 and 2000, as well as three bi-annual collections for the ELS: 2002 in 2002, 2004, and 2012. The data was derived from surveys administered to students, parents, teachers, and school administrators, as well as student test scores for each given year.

Data Background

NELS: 88

Initial sampling consisted of two stages, the first involving creating a stratified sample of 1,655 public and private schools from a pool of over 40,000 that contained 8th grade students. Of the 1,655 selected, 1,057 schools participated in the NELS: 88. The second stage involved a random selection of 26 students per school, whenever possible. If the school did not have 26 students in 8th grade, all students were included in the sample. This process resulted in the total base year sample of 24,599 completed student surveys and 23,701 compiled student academic test scores. The parents of these students were also asked to complete surveys, aimed at gathering data about their highest level of education and employment status, as well as student activities and tendencies outside the classroom. Teachers and each school administrator were

also asked to complete a questionnaire, which led to the compilation of 1,035 surveys from teachers and school administrators.

An oversampling of Hispanic and Asian/Pacific Islanders was performed and used in the NELS: 88 dataset to ensure a large enough sample population of these minority subgroups that had smaller populations, so that the analysis had acceptable precision (National Center for Educational Statistics, 1990).

ELS: 2002

For the ELS: 2002 study, in line with the procedure applied to NELS: 88, the sampling was performed as two-stage process. However, unlike the NELS: 88 study, the ELS study began collecting information from 10th grade, rather than 8th grade. Its initial sampling commenced by creating a stratified sample of 1,221 public and private schools from a pool of over 27,000 that served 10th grade students. Of the 1,221 schools selected, 752 participated in the ELS: 2002. The second stage involved random selection of 26 students per school whenever possible. As before, if the school did not have 26 students in 10th grade, NCES collected the information from all 10th grade students in those schools. Those selected for participation that were unable to complete the survey, either due to limited English proficiency or physical or mental disability, were placed in an expanded sample and were removed after the first wave of collection. The total sample in the base year (i.e., 10th grade) comprised of 19,552 completed student surveys from 752 schools. Again, in line with the NELS: 88 study, the parents of these students were asked to complete surveys as well, in which they reported their highest level of education and employment status, along with student activities and tendencies outside the classroom, for various uses throughout the study. Each school administrator was also asked to complete a questionnaire, which led to the compilation of 1,035 surveys.

As before, an oversampling of Black, Hispanic and Asian/Pacific Islanders was performed in the ELS: 2002 dataset to ensure a large enough sample size for each subgroup population for analysis, so that it had acceptable precision (National Center for Educational Statistics, 2004).

Sample Description

The study sample for this study was formed based on three inclusion criteria. First, since the data was sourced from the first three waves of data for NELS: 88 (8th, 10th, and 12th grade student information), as well as the fifth wave (eight years after high school) and the first two waves and the fourth wave of data for ELS: 2002 (10th and 12th grade student information, eight years after high school), only students who had valid (i.e., positive) longitudinal sampling weights could be included. Sampling weights, which are also referred to as expansion weights, which indicate how many students each student represented in the population, were calculated to "compensate for unequal probabilities of selection into the base year" (National Center for Educational Statistics, 1990) and were provided by NCES.

Second, to be included in the study sample, students needed to have an extracurricular activity participation record in terms of sports, academic/hobby clubs, or the arts, for each wave. When a student did not respond to an item inquiring into these activities, it was coded as "not participated." Further details on coding extracurricular activity participation in the present study are provided in the next section, "Independent Variable of Interest."

Third, students needed to have provided information pertaining to their gender, race/ethnicity, and socioeconomic status (SES). When the initial dataset was assessed against these three criteria, the NELS: 88 sample size declined to 10,658. This sample consisted of approximately 49.7% male (n = 5,299) and 50.3% female (n = 5,359) students. In terms of

race/ethnicity, the sample was predominantly White, non-Hispanic (69.9%, *n* = 7,453), followed by Black, non-Hispanic (12.3%, *n* = 1,306), Hispanic (10.6%, *n* = 1,131), Asian/Pacific Islander (3.4%, *n* = 358), and those that selected "Other" as their racial or ethnic category (3.8%, *n* = 410). The Other racial or ethnic category was created by consolidating the Multiple Response and American Indian categories from the dataset (the summary is provided in the first block of the column in Table 3-1). It should be noted here that all the statistics reported in this thesis were obtained by taking the sample weights into account, so that the values reflected the unbiased estimates of the population parameters.

The criteria described above were also used for selecting the analytic sample for ELS: 2002, reducing its size to 12,529. That sample comprised of 48.9% male (*n* = 6,129) and 51.1% female (*n* = 6,400) students, with 61.8% White, non-Hispanic (*n* = 7,737), 13.8% Black, non-Hispanic (*n* = 1,734), 15.2% Hispanic (*n* = 1,903), 3.9% Asian/Pacific Islander (*n* = 491), and 5.3% students that selected Other/multiple racial or ethnic category (*n* = 663). Within these categories, "Hispanic, no race specified" and "Hispanic, race specified" were combined to create "Hispanic" category, as were "More than one race," "non-Hispanic" and "American Indian/Alaska Native, non-Hispanic" to create the "Other/multiple racial or ethnic origin" category (as shown in the second block of the column in Table 3-1). In all cases, the proportions of minority respondents were higher in the ELS: 2002 dataset than in the NELS: 88. More specifically, Blacks contributed 13.8% to the sample in the ELS data, as opposed to 12.3% in NELS; Hispanic respondents comprised 15.2% of the ELS data versus 10.6% in NELS: 88; there was greater number of Asian respondents in ELS at 3.9% as compared to 3.4% in the NELS data; and the Other category followed this trend, comprising 5.3% of the sample in ELS, and only 3.8% in NELS. The increase in minority proportions from NELS: 88 to ELS: 2002,

especially for Hispanics, reflects the growth trend in the U.S. population (Ennis, Rios-Vargas, & Albert, 2011).

Table 3-1.

Descriptive Statistics: Categorical Demographic Variables for NELS: 88 and ELS: 2002 Data (Weighted)

NELS: 88 (*N* = 10,658)			ELS: 2002 (*N* = 12,529)		
Variable: Categories	*N*	Percent (%)	*Variable:* Categories	*N*	Percent (%)
Gender			*Gender*		
Male	5299	49.7	Male	6129	48.9
Female	5359	50.3	Female	6400	51.1
Race/ethnicity			*Race/ethnicity*		
White	7453	69.9	White	7737	61.8
Black	1306	12.3	Black	1734	13.8
Hispanic	1131	10.6	Hispanic	1903	15.2
Asian/Pacific Islander	358	3.4	Asian/Pacific Islander	491	3.9
Other	410	3.8	Other	663	5.3

It should be noted that the relative (or normalized) weights were computed from the expansion weights by dividing the value of the expansion weight by the average for each case, in order to reflect the actual sample size. These weights were applied to all the analyses in the present study, including descriptive and inferential analyses via multiple and logistic regression models. This study focused on analyzing different aspects of life outcomes measured at age 26,

in relation to the information pertaining to participation in extracurricular activities that the study participants reported when they were middle/high school students over three (for NELS: 88) or two (for ELS: 2002) time periods, respectively. Assigning the data relative weights allowed for the analysis results to be generalized to the target population (Thomas, Heck, & Bauer, 2005).

Measures

Using the National Education Longitudinal Study (NELS) from 1988 through 2000 and the Education Longitudinal Study (ELS) from 2002 to 2012, variables were selected to represent the extent of extracurricular participation and, based on current literature, variables that represented long-term success. The dependent variables in this study consisted of three areas of life outcomes as adults. Those variables were socioeconomic in nature (income, education, and employment). As participation in extracurricular activities was the key independent variable of interest, three extracurricular activity participation variables (athletics, academic/hobby clubs, and the arts) were created, based on the extant literature (Guest & McRee, 2009). The data employed in the analysis indicated how often a student participated in each of these extracurricular activities during middle and high school years. In addition, demographic variables (such as race, gender, and socioeconomic status), along with background variables of post-secondary education, behavioral problems, and parental monitoring, served as the control variables that could have potentially confounded the results.

Dependent Variables of Interest

The dependent variables in this study consisted of three socioeconomic variables (income, education, and employment), since the researcher hypothesized that these constructs were representative of socioeconomic success that can be improved by human development fostered through participating in extracurricular activities, as suggested by pertinent literature.

Description of Dependent Variables NELS: 88

The socioeconomic dependent variables were post-secondary education attainment up to age 26, current employment status at age 26, and current income at age 26. The first variable was *PSEduc* (*n* = 10,658, *M* = .81, *SD* = .97), an interval variable of the highest post-secondary education attained as of 2000 (see the first block of column in Table 3-2). The employment status variable was *F4A12KF* (*n* = 10,402, *M* = .77, *SD* = .420), representing having a full-time job as of January 2000. It was another dichotomous variable, with values zero (0) for "no" and one (1) for "yes." The final socioeconomic dependent variable was *F4HI99* (*n* = 9,849, *M* = 24569.97, *SD* = 18966.77), representing student's income in 1999—a continuous variable in dollars earned per year, ranging from zero (0) to $500,000 (see the first block of column in Table 3-3).

Description of Dependent Variables ELS: 2002

The dependent variables for the ELS: 2002 that represented measure of independent living were education, employment status, and socioeconomic status/income. The first variable, *PSEduc* (*n* = 12,529, *M* = 1.83, *SD* = 1.35), was an interval variable representing the highest post-secondary education attained as of 2012 (see the second block of column in Table 3-2). A greater number of survey respondents indicated having attained Master's or Ph.D. level education in the ELS: 2002 than in the NELS: 88. More specifically, 15.2% had attained a Master's degree in ELS: 2002 versus 2.9% in NELS: 1988, and 11.5% of respondents had earned a Ph.D. in the ELS dataset as compared to 0.5% in the previous dataset. The employment status variable was *dFTemp* (*n* = 12,529, *M* = .68, *SD* = .47), a dichotomous dummy variable with values of 0 for unemployed and 1 for full-time employment during 2011. The analyses revealed that, in the ELS: 2002, there were fewer respondents in full-time employment at age 26 (67.6%)

compared to the NELS: 88 dataset (75.3%). This trend may possibly be explained by the higher educational attainment, as seen by the significant increases in Master's and Ph.D. completions at age 26 in the ELS. Indeed, students pursuing terminal degrees are less likely to be employed full time while in school. The final variable, income, *F3ERN2011* (*n* = 12,529, *M* = 26215.95, *SD* = 24000.76), was a continuous variable ranging from $0 to $250,000, and represented the annual income respondents reported for 2011 (see the second block of column in Table 3-3). Analyses revealed that, at $25,401.47, the average income increased in the ELS data, as compared to the previous dataset, $24,341.61.

Table 3-2.

Descriptive Statistics Post-Secondary Education and Full-Time Employment Status Variables for NELS: 88 and ELS: 2002 Data (Weighted)

NELS: 88 (*N* = 10,658)			ELS: 2002 (*N* = 12,529)		
	N	Percent (%)		*N*	Percent (%)
Post-Sec. Education			*Post-Sec. Education*		
0. None	5759	54.0	0. None	3163	25.2
1. Associate's	1609	15.1	1. Associate's	1824	14.6
2. Bachelor's	2920	27.4	2. Bachelor's	3012	24.0
3. Master's	314	2.9	3. Master's	3092	24.7
4. Ph.D.	56	0.5	4. Ph.D.	1438	11.5
Employment			*Employment*		
0. No	2629	24.7	0. No	4056	32.4
1. Yes	8029	75.3	1. Yes	8473	67.6

Table 3-3.
Descriptive Statistics: Income Variable for NELS: 88 and ELS: 2002 Data (Weighted)

Data source: Variable	*N*	*Minimum*	*Maximum*	*Mean*	*SD*
NELS: 88					
Income	9941	0	500000	24341.61	19025.08
ELS: 2002					
Income	12529	0	250000	25401.47	22904.03

Independent Variables of Interest

The key independent variable of interest in the present study was the number of times a student reported participation in each type of extracurricular activity during middle and high school years (as reported in the NELS: 88 survey). Those were denoted as *NSPP*, *NAHCP*, and *NART*, representing the number of times the respondent indicated that he/she participated in athletics, academic or hobby clubs, and in the arts, respectively, in the school period that the survey pertained to. Each of these variables was the sum of three dummy variables of sports participation (*dSPBY*, *dSPF1*, and *dSPF2*), academic/hobby club participation (*dHACBY*, *dHACF1*, and *dHACF2*), and participation in the arts (*dABY*, *dAF1*, *dAF2*) at each time point that formed the NELS: 88 data set (see the first block of column in Table 3-4). Exactly the same three extracurricular participation variables were created for the ELS: 2002 dataset, and included the two available participation waves (2002 and 2004) because of the nature of the ELS study design (see the second block of column in Table 3-4). The extracurricular participation dummy variables at each time point were created by first dummy coding all activities within the NELS: 88 and ELS: 2002 data that corresponded with extracurricular activities, including both team and individual sports, cheerleading, intramural athletics, all sponsored academic/hobby clubs—such

as student government, National Honor Society, photography, chess, and Future Farmers of America, and forms of performing arts (band, chorus, and dance)—at each time point and then assigning value one (1) if the student participated in at least one activity and zero (0) if not. Note that missing information was treated as zero (0) (not participated) (see Appendix A for Variable List). A much lower percentage of students participated in athletics and the arts in ELS as compared to NELS. More specifically, analysis of the ELS dataset revealed that 49.8% and 63.2% of respondents did not participate in athletics and the arts, respectively, compared to only 21.3% and 39.1% reporting not participating in athletics and the arts, respectively, in the NELS survey. A slightly smaller percentage of students did not participate in academic and hobby clubs in the ELS dataset (39.1%) versus the NELS (38.8%). Similar variation is evident in the participation variables pertaining to one or two time points, throughout the extracurricular activity participation categories. Participation in athletics for only one school year was higher in ELS (31.1%) than in NELS (27.9%). However, reverse findings pertain to participation in academic and hobby clubs (34.5% in ELS versus 35.1% in NELS) and the arts (19.9% in ELS as compared to 35.1% in NELS) in one year only. Again, participation in athletics in both academic years of interest was lower in ELS (19.1%), than in NELS (23.1%), while participation in academic and hobby clubs and the arts was higher in ELS than in NELS. According to the survey data pertaining to two-year participation, 26.7% of respondent participated in academic/hobby clubs in ELS vs. 13.7% in NELS, and 16.9% participated in the arts in the ELS dataset vs. only 13.7% in the NELS.

Table 3-4.

Descriptive Statistics: Extracurricular Activities Participation Variables for NELS: 88 and ELS: 2002 Data (Weighted)

NELS: 88 (*N* = 10,658)			ELS: 2002 (*N* = 12,529)		
Variable: Categories & Codes	*N*	Percent (%)	*Variable:* Categories & Codes	*N*	Percent (%)
Athletics			*Athletics*		
0. No times	2269	21.3	0. No times	6235	49.8
1. One Time	2974	27.9	1. One Time	3895	31.1
2. Two Times	2452	23.0	2. Two Times	2398	19.1
3. Three Times	2962	27.8			
Academic/Hobby Clubs			*Academic/Hobby Clubs*		
0. No times	4163	39.1	0. No times	4860	38.8
1. One Time	3740	35.1	1. One Time	4319	34.5
2. Two Times	1462	13.7	2. Two Times	3349	26.7
3. Three Times	1292	12.1			
The Arts			*The Arts*		
0. No times	4163	39.1	0. No times	7923	63.2
1. One Time	3740	35.1	1. One Time	2490	19.9
2. Two Times	1462	13.7	2. Two Times	2116	16.9
3. Three Times	1292	12.1			

Covariates

Students' background information, such as race/ethnicity, gender, socioeconomic status (SES), prior academic achievements, behavioral problems, and parental monitoring, was used as the control variables because these are well-known characteristics that have strong association with education, employment, and income. Thus, it was postulated that they would be associated with extracurricular activity participation status.

Regarding race/ethnicity, since there were five categories in the original race/ethnicity variable, for this study, the researcher created a set of four dummy variables representing "Black," "Asian," "Hispanic," and "Other" categories *dBlack*, *dAsian*, *dHisp*, and *dOther*, respectively, by making "White" the reference category. Similarly, for gender, a dummy variable *dFemale* representing "Female" category was created, which made "Male" the reference category. As for SES, it was represented by the base year SES (i.e., 8th grade or 10th grade, depending on the dataset), which was a standardized composite score created by family income, parents' education, and parents' occupational status (NELS: 88 M = -.081, SD =.79; ELS: 2002 M = -.004, SD = .72) (see Table 3-5).

Two other covariates that were used for evaluating income were *dFTEmp*, denoting full-time employment status, where zero (0) represented not being employed full time and one (1) represented being employed full-time at the time of the survey; and *dEDSTAT*, a dummy variable for educational status, where zero (0) indicated not being enrolled in any post-secondary courses and one (1) denoted being enrolled at least part time (see Table 3-5). These variables were used for adjustment when evaluating the income level at age 26. Because SES and academic achievement were standardized, no comparison between NELS and ELS could be made.

The analyses performed in this study also controlled for the standardized reading and math scores within the first data collection wave, *BY2XCOMP* (NELS: 88) and *BYTXCSTD* (ELS: 2002), respectively (see Table 3-5). These covariates were included because previous success in the areas of mathematics and reading is a strong predictor of future academic success in post-secondary education (Lee, Daniels, & Puig, 2008) (Reynolds & Burge, 2008) (Buchmann & DiPrete, 2006). Further, in line with the work of Gardner et al. (2008), the present study also controlled for behavioral problems and parental monitoring. The behavioral problems (*BProblems*) variable was created from a measure of getting into trouble at school (anchored at 0 = *never* and 4 = *10 or more times per week*) (see Table 3-5). Similarly, the parental monitoring variable (*ParentM*) was created from an item indicating parents' knowledge of their children's friends' parents (0 = *knows none of friends' parents*, 1 = *knows some of friends' parents*, and 2 = *knows parents of many child's friends*) (see Table 3-5).

Inclusion of these covariates in the analysis enabled more realistic estimation of the association between extracurricular activity participation and the dependent variables. A higher percentage of participants reported having no behavioral problems, or having not been in trouble in school, in the ELS dataset (83.9%) versus the NELS dataset (55.2%), while a greater number of respondents stated they had 1-2 and 3-6 instances of behavioral problems in NELS (29.2% and 7.5%, respectively) as compared to ELS (7.0% and 1.9%, respectively). Similarly, the percentage of parents who knew some and many parents of their children's friends was higher in ELS than in NELS. More specifically, 50.2% of parents knew some of their children's friends' parents in ELS versus 46.7% in NELS, and 30.7% of parents knew many of their children's friends' parents in ELS versus 27.6% in NELS.

Table 3-5.

Descriptive Statistics: SES and Academic Achievement for NELS: 88 and ELS: 2002 Data (Weighted)

	N	*Min.*	*Max.*	*M.*	*SD*
NELS: 88					
SES at Base Year (8th grade)	10658	-2.88	2.56	-.082	.78
Achiev.	10642	29.83	74.70	50.72	9.59
dEDSTAT	10658	0	1	.20	.40
BProblems	10129	0.00	4.00	.62	.84
ParentM	9901	0.00	2.00	1.16	.61
ELS: 2002					
SES at Base Year (10th grade)	12529	-2.11	1.82	-0.004	.72
Achiev.	12529	21.50	78.63	50.13	9.71
dEDSTAT	12529	0	1	.24	.43
BProblems		0.00	4.00	.60	.89
ParentM		0.00	2.00	1.18	.65

Table 3-6.

Descriptive Statistics: Other Covariates for NELS: 88 and ELS: 2002 Data (Weighted)

NELS: 88 (*N* = 10,658)			ELS: 2002 (*N* = 12,529)		
	N	Percent (%)		*N*	Percent (%)
Current Educational Status			*Current Educational Status*		
Not Enrolled	8334	78.2	*Not Enrolled*	9557	76.3
Enrolled	2324	21.8	*Enrolled*	2972	23.7
Behavior Problems			*Behavior Problems*		
0. Never	5882	55.2	0. Never	10512	83.9
1. 1-2 Times	3114	29.2	1. 1-2 Times	882	7.0
2. 3-6 Times	795	7.5	2. 3-6 Times	241	1.9
3. 7-9 Times	164	1.5	3. 7-9 Times	274	2.2
4. Over 10 Times	273	2.6			
Parental Monitoring			*Parental Monitoring*		
0. None	1635	15.3	0. None	1632	13.0
1. Some Parents	4980	46.7	1. Some Parents	6295	50.2
2. Many Parents	2938	27.6	2. Many Parents	3841	30.7

Analytic Strategy

A general framework adopted for the data analysis involved the use of the generalized linear model (GLM) (McCullagh & Nelder, 1989). GLM is a unified approach that can be applied to different types of dependent variables (Fox, 2008). For example, if the dependent variable is continuous, then GLM becomes a usual linear model, i.e., multiple regression model.

If the dependent variable is dichotomous, then GLM represents a logistic regression model. Further, if the dependent variable is a count, then it will become a Poisson regression model. Additionally, if the dependent variables are ordered categories or nominal categories, a cumulative logit model or baseline logit model can be employed as an extension of logistic regression model for dichotomous variables (Agresti & Finlay, 2009). One advantage of GLM is that it helps formulate all the models under the umbrella of GLM, just like a multiple regression model, by simply changing the sampling model and the link function. Thus, the first three research questions can be answered by using the strategy adopted in the multiple regression model. That is, the dependent variables of interest that are relevant to each research question were regressed on the key independent variable, i.e., duration of extracurricular activity. The latter is expressed as three elements, such as number of times the respondent participated in sports (*NSPP*), number of times he/she participated in clubs (*NAHCP*), and number of times student participated in arts (*NART*), by controlling for the covariates, such as gender (*dFemale*), race/ethnicity (*dBlack*, *dAsian*, *dHisp*, and *dOther*), socioeconomic status (*BYSES*), behavioral problems (*BProblems*), and parental monitoring (*PMonitor*). As already mentioned, for any of the GLM analyses performed in this study, sample weights were applied in order to ensure that the results could be generalized to the target population. The only change required was the sampling model and the link function, depending on the nature of the dependent variables.

Specifically, to answer the research question "Do extracurricular activities have positive association with the pursuit of higher education, and to what extent, after controlling for the student's background and his/her middle/high school experience?" the dependent variable was number of years of post-secondary education, which was a continuous variable, thus requiring the standard multiple regression model. That is, the highest level of education completed as of

2000 (*PSEduc*) in the NELS: 88 data and the highest level of expected education completion (*F3STEXP*) in the ELS: 2002 dataset was regressed on the key independent variables, such as *NSPP*, *NAHCP*, and *NART*, with the addition of the control variables, such as SES, gender, race/ethnicity, behavioral problems, and parental monitoring, by applying the sample weights.

The second research question "How is participation in extracurricular activities associated with a student's long-term employment status, after controlling for the student's background and his/her middle/high school experience?" was examined by regressing the independent variables, including educational status (*dEDSTAT*)—since a full-time student would, most likely, not be employed full time as well—on working full time in 2000 (*F4A12KF*) for the NELS: 88 dataset. For the ELS: 2002 dataset, the dependent variable was (*dFTemp*), representing the employment status in 2011.

The third research question "How is participation in extracurricular activities associated with a student's long-term income, after controlling for the student's background and his/her middle/high school experience?" was examined using a weighted logistic regression, regressing the key independent variables and covariates—educational status (*dEDSTAT*), as students are less likely to make money than non-students; post-secondary education (*PSEduc*), since those who attend college are more likely to have higher income than those who do not; and full-time employment status, since those who are employed full time (*dFTEmp*) are more likely to have a higher income—on income at age 26, which are *LNInc99* (NELS: 88) and *LNInc11* (ELS: 2002).

The fourth research question "What are the differences in the associations of athletics, academic/hobby clubs, and the arts with the long-term success of students?" was answered through the examination of results found in the previous research questions by comparing the size of the effects of each type of extracurricular activity.

In order to gain some ideas about the data and the phenomena under investigation, univariate and bivariate descriptive statistics of the variables of interest are provided in Appendix B for both NELS and ELS data as the separate file. At a glance, participating in any kind of extracurricular activity seemed to have positive associations with educational attainment, job security, and income. That is, longer participation resulted in greater educational attainment, more secure employment, and higher income. These tendencies were observed in both NELS: 88 and ELS: 2002 datasets. The more stringent and detailed analyses required to examine the effects of participating in extracurricular activity (separated into sports, academic/hobby clubs, and the arts), controlling for the background variables, were also conducted.

Chapter IV: Results

Mplus version 7 software package (Muthén & Muthén, 2012) was used for conducting all the statistical analyses, as this allowed the generalized linear models (GLM), such as multiple regression for continuous outcome variables (level of post-secondary education attainment and income at age 26) and logistic regression for dichotomous outcome variable (full-time job status), to be fit to the data by applying sample weights. For conducting the analysis via Mplus 7 software, text data files were created using SPSS data file creation process in order to use it as the data input file in Mplus 7 statistical software. The use of Mplus 7 ensured that all variables could have their relative weights applied with maximum likelihood estimation with robust standard errors (MLR). In the following, the results are presented for each dependent variable in the order of post-secondary education attainment, full-time job status at age 26, and the current income at age 26. Moreover, within each dependent variable, NELS: 88 results are presented first, followed by the ELS: 2002 results. Tables are provided to facilitate understanding of the results.

Prior to embarking on the statistical modeling of socioeconomic outcomes, i.e., current post-secondary educational attainment, current full-time employment status, and current income, it was necessary to establish what constitutes a fair and reasonable comparison. This was not easy, given that both full-time employment status and income were dependent variables, and could be potentially affected by numerous control covariates on backgrounds and middle/high school experience, whose significant roles were confirmed in the extant literature. Thus, in terms of the current full-time employment status as the dependent variable, the current educational status needed to be taken into account and be adjusted for, because some of those who attend school (such as college) at age 26 may chose not to work at all or to work part time in

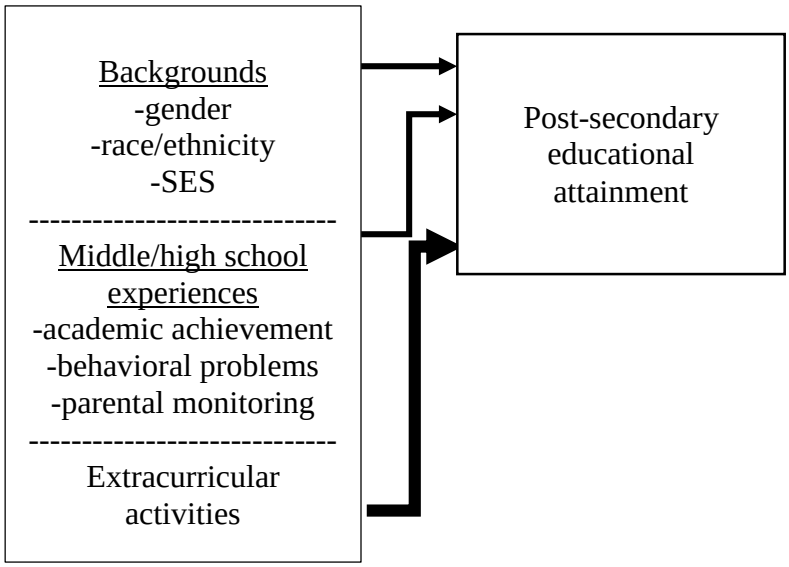
order to reserve sufficient time for study. In a similar vein, when considering income as the dependent variable, both the current schooling status and the employment status needed to be taken into account and be adjusted for. This was necessary because, if those who are currently enrolled in school choose not to work full time, the current schooling status influenced the employment status, and in turn influenced current income. The income these individuals lose because of their school enrollment with the expectation of larger returns in the future may be referred to as opportunity costs of a choice, a concept used in microeconomics (Polley, 2015, p. 11).

The above conceptualizations are diagrammed in Figure 1, where (a) pertains to modeling post-secondary educational attainment, (b) refers to full-time employment status, and (c) relates to income. The bold arrows indicate that the coefficients associated with the arrows were estimated as the partial effects in multiple regressions/logistic regressions, and the coefficients associated with the thick arrows represent the partial effects of extracurricular activities, which were the key independent variables of interest in the present study. The compound type arrows (= >) that appear in Figure 1-b and 1-c indicate the effects of the adjustment variables.

Figure 1: Conceptual Framework for Modeling Socioeconomic Outcomes

Post-secondary educational attainment as outcome variable

Middle/High School Years → 8 years later at age 26



Full-time employment status as outcome variable

Middle/High School Years → 8 years later at age 26

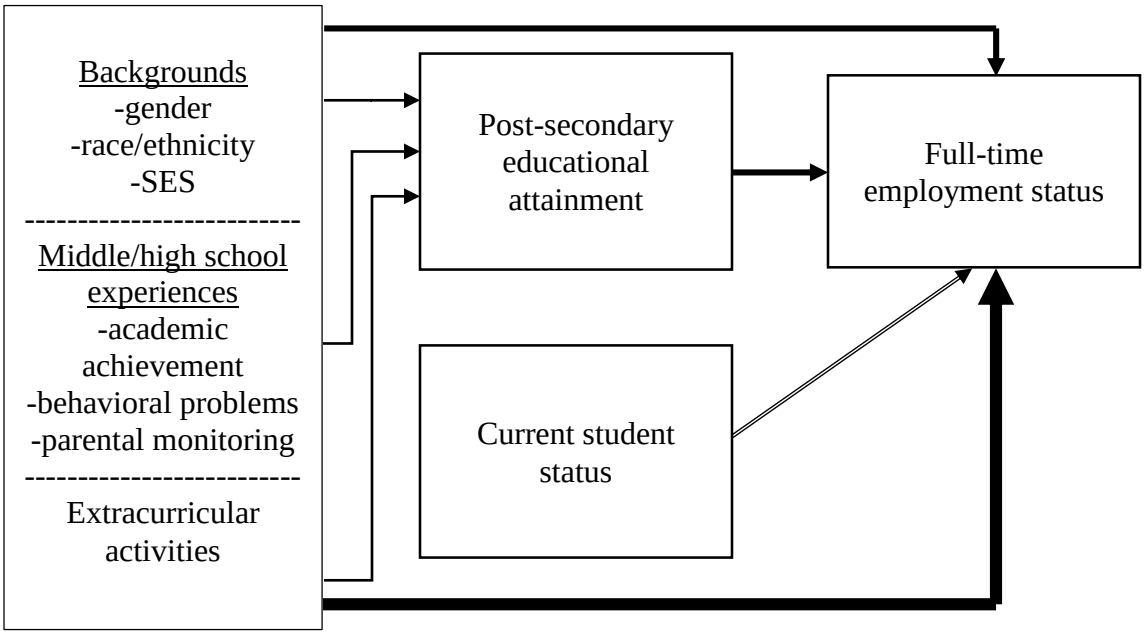
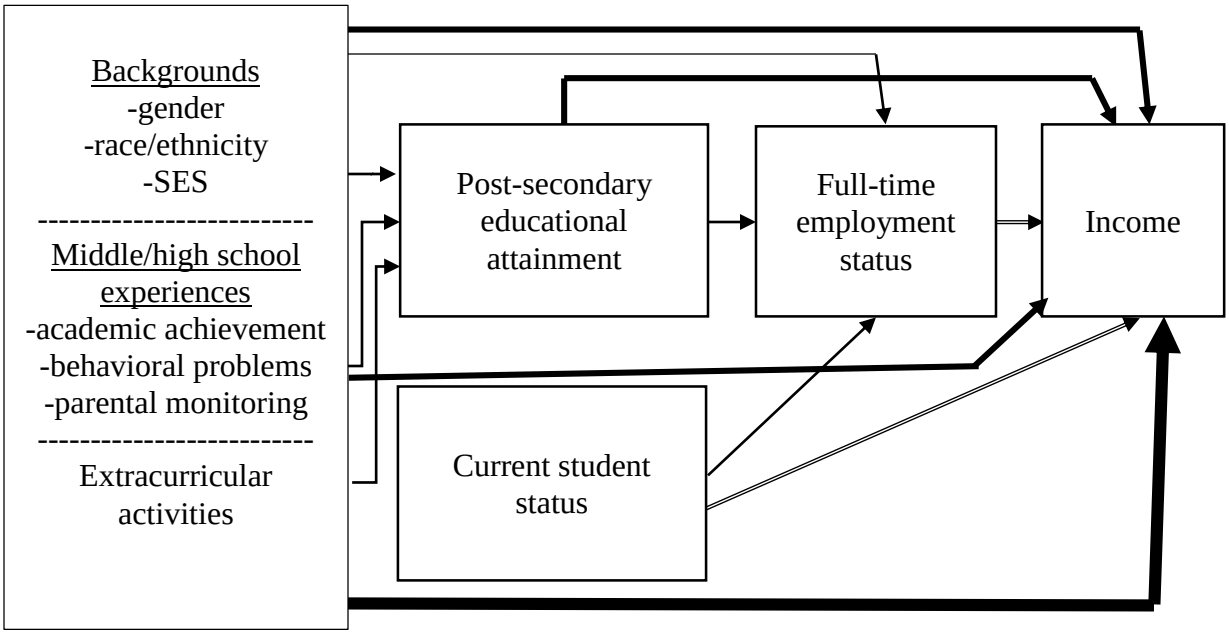


Fig. 1 cont'd: Conceptual Framework for Modeling Socioeconomic Outcomes

Income as outcome variable

Middle/High School Years → 8 years later at Age 26



Note. The thickest arrows (→) represent the possible effects that the extracurricular activities, key independent variables, may have; the compound type arrow (=>) represents the possible effects of adjustment variables; the second thicker arrows (→) represent the possible effects of covariates; and the thinnest arrows (→) represent other indirect effects.

Post-Secondary Education

NELS: 88

For the post-secondary educational attainment status (*PSEduc*) as the dependent variable, at the baseline model (Table 1), number of times the respondent reported participating in athletics (*NSPP*, .152 $p < .001$), in academic/hobby clubs (*NAHCP*, .245, $p < .001$), and in the arts (*NART*, .069, $p < .001$) were all positively associated with *PSEduc* at the $p < .001$ level (see column 2 of Table 4-1). After controlling for background and demographic variables, such as academic achievement in math and reading in middle/high school years, gender, race/ethnicity, family socioeconomic status (SES), parental monitoring, and behavior problems in middle/high school years, *NSPP* (.081, $p < .001$) and *NAHCP* (.101, $p < .001$) were still statistically significant at the $p < .001$ level, whereas *NART* became non-significant at the .05 level (see column 3 of Table 4-1). This finding indicated that the longer students participated in athletics and academic/hobby clubs, the more likely they were to achieve higher education. Since the units of measurement for *NSPP*, *NAHCP*, and *NART* were the same for each activity (representing number of times the student reported participation at the different survey time points), it can be interpreted that academic/hobby club participation had 24.7% (.101/.081 = 1.247) higher association with post-secondary education attainment than did sports participation.

With regard to the control variables, the analyses revealed that prior academic achievement (*Achiev*, .030, $p < .001$), parental monitoring (*ParentM*, .129, $p < .001$), being female (*dFemale*, .124, $p < .001$), and socioeconomic status (*BYSES*, .291, $p < .001$) were all positively associated with post-secondary educational attainment at the $p < .001$ level. In addition, being of Asian descent (dAsian, .153, $p < .01$) was also positively associated with post-secondary educational attainment, while being Native American or Pacific Islander (dOthers, -

.115, $p < .01$) and having behavior problems (*Bproblem*, -.086, $p < .001$) had a negative association with pursuing higher education.

These results for covariates implied that, holding other independent variables in the model constant, the better students performed in middle and high school, the more likely they were to go on to pursue higher education. These findings also implied that, holding other independent variables in the model constant, the more proactive parents were in getting to know their children's friends, the more likely it was that the students would go to college. Females were more likely than males to go to college, as were Asians, while Native Americans and Pacific Islanders were less likely to attend college. Finally, the higher the SES of the student, the more likely he/she was to pursue higher education. Note that all the statements above should be interpreted as the partial coefficient in multiple regression, i.e., as an association after other independent variables in the model were being accounted for.

ELS: 2002

The results from ELS: 2002 dataset were similar to those pertaining to the NELS: 88 dataset. In the baseline model (column 4 of Table 4-1), *NSPP* (.132, $p < .001$), *NAHCP* (.396, $p < .001$), and *NART* (.124, $p < .001$) were all positively associated with post-secondary education attainment with statistical significance. When the control variables were added, all these extracurricular activity constructs were still statistically significant, with *NSPP* (.082) and *NAHCP* (.184) being statistically significant at the $p < .001$ level, while *NART* (.061) was statistically significant at the $p < .01$ level. These results corresponded to those pertaining to the NELS: 88 dataset, with the exception of those related to participation in the arts, which were now statistically significant as well.

The findings pertaining to the control and background variables in the ELS: 2002 dataset were also similar to those obtained in the analysis of the NELS: 88 data. Prior academic achievement (.044), behavioral problems (-.095), being female (.181), and socioeconomic status (.302) were all still statistically significant at the .001 level. Joining these variables at the .001 level were Black (*dBlack*, .550), Hispanic (*dHisp*, .413), and Asian (.367) racial backgrounds, which were previously only significant at the .01 level. Parental monitoring (.053) was still statistically significant, but only at the .05 level.

Trends in 1988-2012

The results pertaining to the ELS: 2002 were similar to those found in the NELS: 88, except that survey participants from minority backgrounds achieved higher educational attainment at 26 in 2012 than in 2000. Being Black and Hispanic was now positively associated with post-secondary educational attainment and this finding was statistically significant. In addition, post-secondary educational attainment of Black respondents was more strongly related in ELS: 2002 at (.550, $p < .001$) than in NELS: 88 (.093, $p < .05$), and Hispanic individuals were also more likely to attain post-secondary education in ELS (.413, $p < .001$) than in the previous dataset (.038). These findings showed that these two groups were now more likely to attend college than whites, holding all other factors constant.

Table 4-1.

Results for Post-Secondary Educational Status NELS: 88 and ELS: 2002

	NELS: 88 Baseline Model Coefficient (se)	NELS: 88 Final Model Coefficient (se)	ELS: 2002 Baseline Model Coefficient (se)	ELS: 2002 Final Model Coefficient (se)
Key Independent Variables				
NSPP	.152*** (.012)	.081*** (.012)	.132*** (.018)	.082*** (.018)
NAHCP	.245*** (.013)	.101*** (.012)	.396*** (.018)	.184*** (.019)
NART	.069*** (.013)	.002 (.012)	.124*** (.019)	.061** (.018)
Control variables				
Achiev		.030*** (.002)		.044*** (.002)
Bproblem		-.086*** (.014)		-.095*** (.015)
ParentM		.129*** (.022)		.053* (.022)
dFemale		.124*** (.024)		.181*** (.028)
dBlack		.093~ (.049)		.550*** (.042)
dHisp		.038 (.035)		.413*** (.041)
dAsian		.153** (.058)		.367*** (.047)
dOthers		-.115** (.042)		.116 (.064)
BYSES		.291*** (.020)		.302*** (.021)
Intercept	.145*** (.022)	-1.156*** (.088)	1.319*** (.018)	-.878*** (.090)
Error Variance	.807*** (.013)	.661*** (.011)	1.685*** (.018)	1.420*** (.019)
N	10658	10071	12529	11671
Global fit index				
Loglikelihood	-13978.569	-12205.154	-21045.617	-18607.150
AIC	27967.137	24438.308	42101.235	37242.300
BIC	28003.508	24539.351	42138.414	37345.408
Sample-size Adjusted BIC	27987.618	24494.861	42122.524	37300.918

~p <.10; *p < .05; **p < .01; ***p < .001

Full-Time Employment

To evaluate the association between participation of each type of extracurricular activity and full-time employment status, it was necessary to control for current education status, because if a person still attends school, he/she is less likely to be employed full time in favor of focusing on studying. Thus, the analyses controlled for current full-time employment status (*dEDSTAT*), even in the baseline model.

NELS: 88

In the full-time employment status baseline model (column 2 of Table 4-2) adjusted for current educational status (*dEDSTAT*), *NSPP* (.179, $p < .001$) and *NAHCP* (.071, $p < .05$) were positively associated, and *NART* was negatively associated (-.079, $p < .05$) with full-time employment status. The negative sign of *dEDSTAT* with statistical significance (-1.120, $p < .001$) was expected, and this was the major reason for controlling for the current education status. When all the background and demographic covariates were controlled for, *NSPP* (.062) and *NAHCP* (.083) were still positively associated with the full-time employment status, whereas *NART* (-.043) was no longer statistically significant. The negative sign of *dEDSTAT* remained, with the same degree of statistical significance (-1.120, $p < .001$).

When examining the covariates, the results revealed that being female (*dFemale*, -.852, $p < .001$), parental monitoring (*ParentM*, .189, $p < .01$), and being Asian (*dAsian*, -.363, $p < .05$) were all statistically significant. These results showed that women were less likely than men, and Asians were less likely than whites, to be employed full time after controlling for level of post-secondary education, type and level of extracurricular activity participation, academic achievement in middle/high school, behavioral problems, parental monitoring, gender, race/ethnicity, and SES in the NELS: 88 dataset. Finally, *PSEduc* was highly positive (.166, $p <$

.001). In addition, parental monitoring was positively associated with full-time employment after controlling for other independent variables in the model.

Table 4-2-a.

Results for Full-Time Employment Status NELS: 88

	Baseline Model w/ dEDSTAT Adjustment Coefficient (se)	Odds-Ratio	Final Model Coefficient (se)	Odds-Ratio
Key Independent Variables				
NSPP	.179*** (.032)	1.196	.062~ (.035)	1.064
NAHCP	.071* (.036)	1.074	0.83~ (.045)	1.086
NART	-.079* (.033)	0.924	-.043 (.035)	0.958
Adjustment				
dEDSTAT	-1.120*** (.083)	0.326	-1.163*** (.083)	0.313
Control Variables				
PSEduc			.166*** (.043)	1.181
Achiev			.000 (.005)	1.000
Bproblem			-.039 (.057)	0.962
ParentM			.189** (.070)	1.208
dFemale			-.852*** (.089)	0.427
dBlack			.003 (.168)	1.003
dHisp			.040 (.119)	1.041
dAsian			-.363* (.175)	0.696
dOthers			-.118 (.171)	0.894
BYSES			-.124 (.061)	0.884
Intercept	1.094*** (.080)		1.163*** (.088)	
N	10658		10071	
Global Fit Index				
Loglikelihood	-5695.774		-5180.642	
AIC	11401.547		10391.283	
BIC	11437.917		10499.545	
Sample-size Adjusted BIC	11422.028		10451.897	

Note 1. Coefficients are represented in logit scale; ~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$;
Note 2. In order to conform to the standard logistic regression formulation, the sign of the intercept estimate was reversed since Mplus uses a threshold parameter in probit regression formulation instead of intercept (Appendix 1, Muthén, 1998-2004).

ELS: 2002

In the ELS: 2002 dataset, the baseline model with adjusted educational status (column 2 of Table 4-2-b), *NSPP* (.294, $p < .001$) and *NAHCP* (.124, $p < .05$) were both positively associated with full-time employment, while *NART* (-.079, $p < .01$) was negatively associated. Again, the strong negative sign and statistical significance of *dEDSTAT* (-.706, $p < .001$) justified the need to control for current schooling status when examining the current employment status. After controlling for post-secondary educational attainment, demographic and background variables pertaining to the high school period, such as achievement, behavioral problems, and the level of parental monitoring, *NSPP* (.180, $p < .001$) and *NAHCP* (.079, $p < .01$) were statistically significant and positively associated with full-time employment status. Moreover, *dEDSTAT* still had a statistically significant association (-.766, $p < .001$), whereas *NART* became non-significant (-.05).

Similar to the NELS: 88 results, the analysis of this dataset revealed that being female (-.629, $p < .001$), Asian (-.473, $p < .001$), and having more involved parents (*ParentM*, .185, $p < .001$) were all statistically significant predictors of student's future employment status. In addition, post-secondary educational attainment (*PSEduc*, .053, $p < .05$), prior academic achievement (*Achiev*, .018, $p < .001$), exhibiting behavioral problems (*Bproblems*, -.051, $p < .05$), and being of other ethnic backgrounds (*dOthers*, -.480, $p < .001$) were also statistically significant in this context. Since behavioral problems, being female, Asian, and of other ethnic background were negatively associated, students having one or more of the latter three characteristics were less likely to be employed full time than whites, even when the remaining aspects of the model was the same. Conversely, if a person had more behavioral problems in high school, he/she was more likely to be employed full time at age 26, even when qualifications

are controlled for. Prior achievement, being positively associated with employment status, suggested that the higher the student's academic achievement, the more likely he/she was to be employed full time at age 26. The same can be said for post-secondary educational attainment.

Table 4-2-b.

Results for Full-Time Employment Status ELS: 2002

	Baseline Model w/ dEDSTAT Adjustment Coefficient (se)	Odds ratio	Final Model Coefficient (se)	Odds ratio
Key independent variables				
NSPP	.294*** (.031)	1.342	.180*** (.034)	1.198
NAHCP	.124* (.030)	1.132	.079* (.035)	1.082
NART	-.079** (.031)	0.924	-.050 (.033)	0.951
Adjustment variable				
dEDSTAT	-.706*** (.043)	0.494	-.766*** (.059)	0.465
Control variables				
PSEduc			.053* (.082)	1.055
Achiev			.018*** (.003)	1.018
Bproblem			-.051~ (.029)	0.951
ParentM			.185*** (.040)	1.204
dFemale			-.629*** (.054)	0.534
dBlack			-.112 (.079)	0.894
dHisp			-.120 (.076)	0.887
dAsian			-.473*** (.083)	0.623
dOthers			-.480*** (.108)	0.619
BYSES			.021 (.040)	1.021
Intercept	.659*** (.043)		.042 (.174)	
N	12529		11671	
Global Fit Index				
Loglikelihood	-7677.059		-6922.589	
AIC	15364.118		13875.178	
BIC	15401.297		13985.651	
Sample-size Adjusted BIC	15385.408		13937.983	

Note 1. Coefficients are represented in logit scale; ~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$;
Note 2. The sign of the intercept was reversed from the original Mplus output so that the model represents the standard logistic regression model

Trends in 1988-2012

In order to appreciate the trends between NELS and ELS datasets, which were collected 14 years apart, the results for the final models were placed in Table 4-2-c side by side. As can be seen, the association of sports participation with full-time employment was slightly stronger in the ELS dataset (.180, $p < .001$) as compared to the NELS data (.062, $p < .10$). Post-secondary educational attainment was more strongly associated in the NELS (.166, $p < .001$) versus ELS (.053, $p < .05$) survey, whereas prior academic achievement was more strongly associated in ELS (.018, $p < .001$) as compared to NELS (.000).

Table 4-2-c.

Comparative Results for Full-Time Employment Status between NELS and ELS Data Sets

	NELS: 88 Final Model Coefficient (se)	Odds-Ratio	ELS: 2002 Final Model Coefficient (se)	Odds-Ratio
Key Independent Variables				
NSPP	.062~ (.035)	1.064	.180*** (.034)	1.202
NAHCP	.083~ (.045)	1.086	.079** (.035)	1.093
NART	-.043 (.035)	0.958	-.050 (.033)	0.954
Adjustment				
dEDSTAT	-1.163*** (.087)	0.313	-.766*** (.087)	0.485
Control Variables				
PSEduc	.166*** (.043)	1.181	.053* (.082)	1.055
Achiev	.000 (.005)	1.000	.018*** (.003)	1.018
Bproblem	-.039 (.057)	0.962	-.051~ (.029)	0.951
ParentM	.189** (.070)	1.208	.185*** (.040)	1.204
dFemale	-.852*** (.089)	0.427	-.629*** (.054)	0.534
dBlack	.003 (.168)	1.003	-.112 (.079)	0.894
dHisp	.040 (.119)	1.041	-.120 (.076)	0.887
dAsian	-.363* (.175)	0.696	-.473*** (.083)	0.623
dOthers	-.118 (.171)	0.894	-.480*** (.108)	0.619
BYSES	-.124 (.061)	0.884	.021 (.040)	1.021
Intercept	1.163*** (.088)		.042 (.174)	
N	10071		11671	

Note 1. Coefficients are represented in logit scale; ~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$;
Note 2. The sign of the intercept was reversed from the original Mplus output so that the model represents the standard logistic regression model

Income

For the reasons mentioned in the beginning of this chapter, as the conceptual framework, "full-time employment status" was considered and used as another adjustment variable in addition to "current education status," since students may choose not to work full time.

NELS: 88

The baseline model consisted of the key independent variables regressing on income in 1999 with current schooling adjustment (*dEDSTAT*) (column 2 of Table 4-3-a). In this model, *NSPP* (.304, $p < .001$) and *NAHCP* (.116, $p < .01$) were statistically significant and were positively associated with income. In addition, *dEDSTAT* was significantly negatively associated with income (-.404, $p < .001$), indicating that the current schooling status significantly reduced the income level, which was an intuitive finding. When the model was further adjusted for current schooling and full-time employment status (*dFTemp*), both *NSPP* (.199, $p < .001$) and *NAHCP* (.074, $p < .05$) were still statistically significantly and positively associated with income; on the other hand, the coefficient pertaining to educational status changed the sign from negative to positive, with statistical significance at .001 level (.335, $p < .001$), which was surprising but interesting. Full-time employment was positively and strongly associated (3.326, $p < .001$), which was not surprising. In the final model, with two adjustments and covariates, *NSPP* (.077, $p < .01$) was still significant, as were educational status (.217, $p < .05$), post-secondary education level (.149, $p < .001$), and full-time employment status (3.053, $p < .001$). These results showed that the more actively involved student was in athletics during middle and high school years, the higher his/her income was. Additionally, the more post-secondary education someone obtained, and whether he/she was employed full time, also increased his/her income in 1999. Further, going to school reduced income, but once the employment status was

controlled for, e.g., full time versus part time, individual attending school and continuing education would earn more than a person who does not.

In the final model, when examining the covariates, the results revealed that prior academic achievement (.017, $p < .001$) was positively associated, indicating that students who scored higher on achievement tests were more likely to be higher earners. In addition, females (-.496, $p < .001$) were likely to earn less than men, even when all other variables were held equal.

Table 4-3-a.

Results for Income at Age 26 NELS: 88

	Baseline Model w/ dEDSTAT Adjustment	Baseline Model w/ dEDSTAT and dFTEmp Adjustments	Final Model
	Coefficient (se)	Coefficient (se)	Coefficient (se)
Key Independent Variables			
NSPP	.304*** (.032)	.199*** (.027)	.077** (.030)
NAHCP	.116** (.037)	.074* (.033)	.000 (.039)
NART	-.013 (.040)	.029 (.033)	.028 (.030)
Adjustment variables			
dEDSTAT	-.404*** (.090)	.335*** (.095)	.217* (.091)
dFTemp		3.326*** (.141)	3.053*** (.144)
Control variables			
PSEduc			.149*** (.033)
Achiev			.017*** (.005)
Bproblem			.001 (.048)
ParentM			-.018 (.059)
dFemale			-.496*** (.079)
dBlack			-.139 (.174)
dHisp			-.001 (.114)
dAsian			-.197 (.150)
dOthers			-.094 (.150)
BYSES			.061 (.047)
Intercept	8.694*** (.108)	6.724*** (.172)	6.121*** (.328)
Error variance	6.860*** (.339)	4.902*** (.196)	4.530*** (.197)
N	9906	9906	9381
Global Fit Index			
Loglikelihood	-23593.999	-21909.694	-20397.267
AIC	47199.999	43873.387	40828.535
BIC	47243.204	43923.794	40950.024
Sample-size Adjusted BIC	47224.137	43969.849	40896.001

~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

ELS: 2002

As shown in column 2 of Table 4-3-b, the baseline model for income at age 26, with the adjustment of current schooling (*dEDSTAT*), in the ELS: 2002 data revealed that *NSPP* (.334, $p < .001$) and *NAHCP* (.244, $p < .001$) were statistically significantly and positively associated with income to a lesser extent. As expected, those still in school had, on average, less income than those who did not pursue further education (*dEDSTAT*, -.359, $p < .001$). When full-time employment status was adjusted for, *NSPP* (.145, $p < .001$) and *NAHCP* (.163, $p < .05$) were still positively associated, and *NART* became statistically significant, with positive sign of small magnitude (.069, $p < .10$). In the final model, none of the key independent variables of extracurricular activity participation were statisically significant. With respect to the two adjustment variables, full-time employment status (*dFTemp*) remained statistically significant with large effect size (2.927, $p < .001$), whereas the current educational status (*dEDSTAT*) was no longer statistically significant (.055, $p = .507$, two-tailed).

The covariates, post-secondary educational attainment (*PSEduc*, .065, $p < .05$), prior academic achievement (*Achiev.*, .035, $p < .001$), and socioeconomic status (*SES*, .086, $p < .01$), were all postitively associated with income.

Table 4-3-b.

Results for Income at Age 26 ELS: 2002

	Baseline Model w/ dEDSTAT Adjustment	Baseline Model w/ dEDSTAT and dFTEmp Adjustments	Final Model
	Coefficient (se)	Coefficient (se)	Coefficient (se)
Key Independent Variables			
NSPP	.334*** (.043)	.143*** (.039)	.041 (.042)
NAHCP	.244*** (.045)	.103* (.040)	.017 (.044)
NART	.017 (.043)	.069~ (.039)	.048 (.040)
Adjustment			
dEDSTAT	-.359*** (.083)	.138~ (.078)	.055 (.082)
dFTemp		3.119** (.085)	2.927*** (.087)
Control variables			
PSEduc			.065* (.029)
Achiev			.035*** (.004)
Bproblem			-.042 (.039)
ParentM			.066 (.054)
dFemale			-.383*** (.068)
dBlack			-.075 (.106)
dHisp			-.130 (.113)
dAsian			-.442*** (.125)
dOthers			-.165 (.158)
BYSES			.086 (.050)
Intercept	8.430*** (.069)	6.397*** (.097)	5.074*** (.243)
Error variance	10.529*** (.251)	8.472*** (.197)	8.172*** (.201)
N	12529	12529	11671
Global Fit Index			
Loglikelihood	-32525.488	-31162.982	-28819.656
AIC	65062.976	62339.965	57673.312
BIC	65107.591	62392.015	57798.515
Sample-size Adjusted BIC	65088.523	62369.770	57744.491

~$p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Trends in 1988 – 2012

Table 4-3-c compares the results of the final models for NELS: 88 and ELS: 2002. As with the NELS: 88 dataset, being female (-.383, $p < .001$) was still negatively associated with earning higher income, though less so than in the survey conducted 14 years prior. Similarly, being of Asian descent (-.442, $p < .001$) was negatively associated with income in the ELS: 2002 dataset; however, this relationship lost statistical significance in the NELS: 88 dataset.

These results, especially those including the covariates, were consistent with those reported in the current literature and prevalent trends in the United States. Their implications for future research and policy will be discussed in the following chapter.

Table 4-3-c.

Results for Income at Age 26: Comparison of NELS and ELS Final Model

	NELS: 88 Final Model	ELS: 2002 Final Model
	Coefficient (se)	Coefficient (se)
Key Independent Variables		
NSPP	.077** (.030)	.041 (.042)
NAHCP	.000 (.039)	.017 (.044)
NART	.028 (.030)	.048 (.040)
Adjustment variables		
dEDSTAT	.217* (.091)	.055 (.082)
dFTemp	3.053*** (.144)	2.927*** (.087)
Control variables		
PSEduc	.149*** (.33)	.065* (.082)
Achiev	.017*** (.005)	.035*** (.004)
Bproblem	.001 (.048)	-.042 (.039)
ParentM	-.018 (.059)	.066 (.054)
dFemale	-.496*** (.079)	-.383*** (.068)
dBlack	-.139 (.174)	-.075 (.106)
dHisp	-.001 (.114)	-.130 (.113)
dAsian	-.197 (.150)	-.442*** (.125)
dOthers	-.094 (.150)	-.165 (.158)
BYSES	.061 (.047)	.086** (.050)
Intercept	6.121*** (.328)	5.074*** (.243)
Error variance	4.530*** (.197)	8.172*** (.201)
N	9381	11671

~$p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Chapter V: Discussion

This chapter presents discussions of the answers to each of the research questions that guided the present study, and provides the interpretation of the results, along with study limitations, and directions for future research. To reiterate, the research questions the study aimed to answer were:

1. Do extracurricular activities have positive association with the pursuit of higher education, and to what extent, after controlling for the student's background and his/her middle/high school experience?
2. How is participation in extracurricular activities associated with a student's long-term employment status, after controlling for the student's background and his/her middle/high school experience?
3. How is participation in extracurricular activities associated with a student's long-term income, after controlling for the student's background and his/her middle/high school experience?
4. What are the differences in the associations of athletics, academic/hobby clubs, and the arts with the long-term success of students?
5. Are results from the NELS: 88 comparable to those found in the ELS: 2002 dataset, using similar variables that measure the same construct?

Each of these research questions will be answered in detail, along with the interpretation of the pertinent findings and their value for research and practice.

The examination of whether extracurricular activities positively influence the pursuit of higher education revealed that, in the NELS: 88 dataset, participation in athletic activities and academic/hobby clubs had an association of .081 ($p < .001$) and .101 ($p < .001$), respectively, for

every wave, after controlling for background variables and middle/high school experiences. In other words, the findings suggest that participating in athletics and academic/hobby clubs increased the likelihood of the student pursuing post-secondary education, and the association was stronger as duration of participation increased. The results pertaining to the ELS: 2002 dataset were similar. More specifically, participation in athletics (.082, $p < .001$), academic/hobby clubs (.184, $p < .001$), and the arts (.061, $p < .01$) had positive, statistically significant association with pursuing post-secondary education. Based on the results pertaining to this dataset, all three of the extracurricular activity constructs increased the likelihood of the respondents continuing their education beyond high school, showing that the benefits of these activities were solid predictors of post-secondary education.

When the association of participation in extracurricular activities with employment status was examined, such as the ones in athletics (.062, $p < .10$) and academic/hobby clubs (.083, $p < .10$)[3]. In the ELS: 2002 data, these two same extracurricular activities were found to be statistically significantly associated with full-time employment status more clearly with lower p-values (athletics (.180, $p < .001$) and academic/hobby clubs (.079, $p < .05$)), and athletics had a more than twice stronger association than academic/hobby clubs. This finding may be due to the physical, "blue collar nature" of athletic participation and competition. Indeed, empirical evidence shows that, given the consequences of missing sports practice, athletes must work hard every day to be successful—traits that are also highly valued in full-time employment. These two constructs, athletics and academic/hobby clubs, appeared to parallel each other in many

[3] A tilde symbol (~) was used for the estimated coefficients with *p*-values smaller than .10, but larger than .05 level with two-tailed test. The reason for this marking is that we just wanted to indicate that these estimates be differentiated from the ones that had much larger *p* values in the inferences, although they did not reach the conventional level of significance at .05. There was no intention to convey to declare as sure significant findings. For that purpose, practical significance should be evaluated from the effect size perspectives. This will be performed later in this chapter and the implications will be discussed.

ways. Clubs, however, are closely related to individual's interests, including finding a career that one has passion or aptitude for. While the association was not as strong as that identified for athletics, clubs were still positively associated with full-time employment, and both associations increased with prolonged students' participation.

Regarding income, analysis of the NELS: 88 data showed that athletics (.077, $p < .01$) was the only extracurricular activity statistically significantly associated with subsequent success. In addition to athletics, educational status (.217, $p < .05$), post-secondary educational attainment level (.149, $p < .01$), and full-time employment status (3.053, $p < .001$) were all positively associated with income as well. The covariate that stood out most was education status, which changed the sign of the coefficient once the employment status was adjusted. This indicates that, although the persons who were pursuing higher education did not earn as much as those who did not, mainly because the former group chose not to work full time in order to focus on their studies, once the employment status was adjusted for, those who pursued higher education had higher income. In the ELS: 2002 dataset, none of the extracurricular activities were statistically significant predictors of income, once all other factors in the model were adjusted and controlled for.

Upon examining the similarities and differences among data pertaining to athletics, academic/hobby clubs, and the arts, it could be ascertained that participation in athletics was the most consistent variable to be positively associated—throughout both datasets and across dependent variables—with five out of six models showing statistically significant results. Academic/hobby clubs were statistically significant variables in four of the six models. The arts were only statistically significant in one model—post-secondary education status from the ELS: 2002 data. In three out of the six models, participation in athletic activities was statistically

significant at the $p < .001$ level, compared to only two models for clubs and no models for the arts. These results indicated that those who participated in athletics were more likely to have well-rounded success post-high school. While this statement seems blanketed, five of the six models showed statistical significance, justifying this conclusion.

Finally, when comparing the results from NELS: 88 and ELS: 2002, the same pattern of association in all but two cases was evident. The first of these exceptions pertained to participation in the arts programs being statistically significant predictor for post-secondary education status in ELS: 2002 but not NELS: 88. The other case was that athletic pursuits were significant for the level of income attained in NELS: 88 but not ELS: 2002. While there were some differences such as above, their overall similarities of the results were close enough not to conclude that the results from two data sets were qualitatively different or that the results from the NELS: 88 should be considered outdated and useless. The fact that two data sets exhibited quite similar results would indicate that the nature of the effects (or the partial associations) of extracurricular activities with socio economic outcomes such as post secondary education attainment, full-time employment status, and income at age 26 in the U.S. stayed the same over a period of more than a decade, even though there were some changes in the population demographics, economies, and etc. This fact would be useful for predicting the consequences of recently occurring budget cuts.

Background Demographic Covariates

With respect to the associations that demographics and background variables may have with future socioeconomic outcomes on young adults, the study yielded some valuable information, derived from both datasets. For example, females were more likely to pursue higher education than males in both the NELS: 88 (.124, $p < .001$) and ELS: 2002 (.181, $p <$

.001). Females were also less likely to be employed full time, and this finding was statistically significant at $p < .001$ for both NELS: 88 (-.852) and ELS: 2002 (-.627) datasets. In terms of income, keeping all factors the same, women earned less than their male counterparts. Again, this finding was statistically significant at $p < .001$ for both NELS: 88 (-.496) and ELS: 2002 (-.383) datasets. This result confirmed the well-established reality that women still earn less in the workplace than do men, even when equally qualified and experienced (Blau, Gielen, & Zimmerman, 2012). According to available evidence, in 2011, U.S. women earned 82% of male wages (Kim, 2013, p. 278). Recent literature suggests that the gender wage gap occurs over the entire distribution of educational attainment and is the greatest in those who did not attain advanced degrees (Kassenboehmer & Sinning, 2014, p. 340). This disparity demands further examination, and while it appears that some change in this area has occurred in the recent past (as evident in the finding of a smaller negative association), there are still strides to be made if we are to achieve gender equality (Friedman, 2015).

Blacks were found more likely to pursue higher education than whites in the ELS: 2002 (.550, $p < .001$) data. This result could be attributed to the many programs available to increase the number of minorities attending college and the generalized movement towards eliminating racial discrimination. Focusing on Hispanics (.413, $p < .001$) and Asians (.367, $p < .001$), the findings revealed the same trend in 2002 but not in 1988, where only Asians (.153, $p < .01$) were more likely to pursue higher education than were whites. Asians were also less likely to be employed full time in 2002 (-.473, $p < .001$) and earned lower income (-.442, $p < .001$). Current literature supports this finding, asserting that—with the exception of those that did not complete high school—Asians were more likely to be unemployed than were whites throughout the first decade of the 21st century (Mishel, Bivens, Gould, & Shierholz, 2012, p. 340). In addition, the

tendency of Asians to earn less than whites is particularly apparent among those who did not pursue higher education (Mishel et al., 2012, p. 233). Asian women are at a particular disadvantage, as evidenced by their average earning of $274 per week, or 23% less than their male peers in 2012, which is the greatest gender difference across all races (Casey, 2013, p. 2) (Kim, 2013, p. 278). These wage imbalances between whites and minorities could be attributed to limited language skills or cultural differences; however, no data was available to further investigate this hypothesis in the present study. Moreover, a qualitative study would be necessary to explore these theories.

Finally, in both datasets, base year socioeconomic status was statistically significant predictor of post-secondary education attainment (.291, $p < .001$) in NELS and (.302, $p < .001$) in ELS, as well as for income level in ELS: 2002 (.086, $p < .01$). The opportunity to pursue higher education is most often afforded to those who have the means to pay tuition. Higher SES is thus a precursor for being able to afford to attend college, and achieving a high-paying job, thus continuing this cycle by paying for one's children to go to school. While many students with lower SES receive financial aid to attend college due to financial hardships, the slight increase in the relationship between SES and post-secondary education from 1988 (.291, $p < .001$) to 2002 (.302, $p < .001$) shows the existence of this pattern.

High School Experiences Covariates

Prior academic achievement was positively associated with all of the dependent variables, except for full-time employment status and income in the NELS: 88 dataset. This finding demonstrates that a student's success in school was a direct predictor of attaining higher education, obtaining full-time employment, and earning a higher level of income. Having behavior problems while in school was negatively associated throughout and was statistically

significant in three of the six models, including both the NELS: 88 (-.086) and ELS: 2002 (-.095) for post-secondary education at $p < .001$ level. This result indicates that the more often students were in trouble in school, the less likely they were to obtain post-secondary education, and were also less likely to be employed full time, while being more likely to earn lower income. Parental monitoring was measured through the number of friends' parents the student's parents know, and was significant in four of the six models—the two models for which this was not the case were the income models. This result suggested that the more involved parents were in their children's social lives, the more likely the students were to pursue post-secondary education and be employed full time at age 26.

Implications

The trends explored through this research implies that the trends of the nature and strength of association between extracurricular activities and socioeconomic outcomes have remained the same across the two datasets. With this statement being true, it can be inferred that the NELS: 88 dataset is still a viable source for research in the social science, particularly in the field of education. Some colleagues have stated that the "NELS: 88 dataset is outdated and the findings from NELS: 88 is not useful for tackling current issues in education." I argue that it should still be a useful resource that should be utilized for many research projects, especially when the goal of study is to examine the change or invariance of the certain effects or associations over time, as was done in the present study. The NELS: 88 data set is actually a stronger data set in terms of design, since it provides a pre-high school wave, 8th grade, the information from which can be used to control for experiences gained before high school, which is not available in the newer ELS: 2002 data set, the initial observation of which was 10th grade,

nor in the most recent high school longitudinal study of 2009 ("High School Longitudinal Study of 2009 (HSLS:09)," 2015), which started the data collection from 9th grade.

Throughout the analysis we found that the arts had no statistically significant association with any of the dependent variables except for one case (post-secondary education attainment in ELS: 2002 data set), and some of them, although they were not statistically significant, even had negative signs, which were quite different from the results for other two categories of extracurricular activities. These findings may have to do with the structure of the performing arts. For example, post-high school students who wished to pursue performing arts careers may attend specialized academies, rather than traditional institutions of colleges and universities, which may not have been captured adequately in the survey questions. It is also possible that the route of post-high school education may put these students on non-traditional paths, leading to lower income and less full-time employment opportunities. Very few musicians make a living wage; therefore, they may be employed part-time, and would not associate with the full-time employment status.

Further, we should also consider the nation's economic status differences found in the time periods that these datasets were collected. For example, NELS: 88 had a final wave that ended in 2000, a time when we had a national surplus. However, due to the military needs since then, we have had a national debt in the trillions. This change in the nation's economy could have been responsible for some of the differences found in the present study.

Some cultural differences in athletics observed in these time periods also need to be considered. For example, culturally, athletics have become more individualized, with personal trainers, travel teams, and parents relocating to another state, or in some cases another country, to ensure that their children have the best opportunity to be on the best sports team. This cultural

shift in athletics may have caused some change in the role of school-sponsored sports activities and thus influenced the results we obtained.

When interpreting the practical significance for the strength of association of each type of extracurricular activity, all of the statistically significant associations indicated very small effect sizes from the conventional rule of thumb perspectives such as Cohen's d with .2 small, .5 medium, and .8 as large effect sizes. For example, for the post-secondary education attainment outcome, the half-standardized regression coefficient (i.e., standard deviation change in dependent variable for the unit change in the independent variable, which is one more time participation in an extracurricular activity and this half-standardized coefficient can be considered to be a comparable measure to Cohen's d in this study's scenario) is at the largest at 0.14 for academic/hobby club participation in ELS: 2002 data, odds-ratio 1.202 for sports participation in ELS:2002 data for the full-time employment, and the half-standardized coefficient 0.03 for sports participation in NELS: 88 data for the log income.

However, when translated into actual units for each measure, it may be interpreted as practically important effects. For example, 0.14 points in the original post-secondary education variable translates to 3.26 months more post-secondary education for one more time participation in academic/hobby club in ELS: 2002 if we approximate one unit in the dependent variable as two years post-secondary education (e.g., 0 = high school completion, 1 = associate degree,2 = bachelor's degree, etc.), which is further translated as 6.56 months more post-secondary education for two more times participation. 1.202 odds ratio was translated into a 20.2% increase in odds to be employed full-time for one more time participation in sports and 40.4% increase in odds for two more times participation. Finally, 0.03 half-standardized coefficient in log income can be translated into $870.40 more annual income for one more time participation in sports in

NELS: 88. This can be further translated into a $2,504.60 difference as the annual income on average when we compare the person who participated three times in sports in middle/high school years to the person who did not participate in sports at all in NELS: 88 data, holding other factors in the model such as academic achievement, gender, race, SES, etc. constant. The amount $2,504.60 as the difference in annual earnings is considered to be substantial, especially for young adults of age 26. Thus, in overall, it can be said that though the effect sizes are considered to be very small when we interpret them from the conventional rule of thumb frequently used in behavioral and social sciences to evaluate the practical significance, they seem to be substantively meaningful effects when we interpret them in the real life contexts.

Limitations

This study's limitations stem from the datasets employed in the analyses. In some cases, the datasets did not contain the same items for creating composite variables, resulting in some of the corresponding variables not being exactly the same. For instance, parental monitoring was measured through only one item in the NELS: 88 dataset, whereas ELS: 2002 provided three items for capturing this phenomenon. While the analysis adequately compensated for the discrepancy through introduction of comparable variables, this does not indicate that the variables are exactly the same. Not having complete prior academic achievement data is another limitation of this study. More specifically, the two datasets failed to mean academic achievement information in math and reading for every wave, resulting in an incomplete representation of students' academic accomplishments in middle/high school.

Another limitation of this study is the lack of information to discuss "equal access" of extracurricular activities. For example, rural schools may not offer the same extracurricular activities are suburban schools, due to a lack of support and/or funding. Further, even though

schools did provide opportunities for students to participate in extracurricular activities, students may not have participated because of economic reasons. For example, if the participation in extracurricular activities required some transportation from the student's family and the family could not afford it, the student could not participate even though he/she wanted to. Similarly, if participation required paying fees or purchasing expensive equipment, this situation may have resulted in nonparticipation. The current study did not provide such information and therefore there was no way to distinguish whether students did not participate by their choice or due to other circumstances.

Finally, having only two waves in ELS: 2002 as opposed to three waves in NELS: 88 was a limitation and resulted in potentially skewing the results. It would have been better if the ELS: 2002 data set had 8th grade information as in NELS: 88, which would have made the two data sets more comparable and made our inferences stronger, since the measurements made at 8th grade were clearly events before students entered high school, from which we can establish temporal ordering.

Future Research Directions

In examining long-term success in post-secondary measures, the researcher plans to use the same methodology and datasets to examine civic responsibility, as he strongly believes these concerns should be considered when reviewing the benefits of extracurricular activities. Indeed, form the social perspective, becoming a good citizen is a major aspect of human life that leads to life satisfaction and is a reflection of the goals of the educational experience. Revealing the level of adult civic responsibility with regard to high school extracurricular activity participation could enable examining the affective traits not shown in this study.

For the most part, both the NELS: 88 and ELS: 2002 datasets yielded the same results at least in terms of the socio economic outcomes. Therefore, the researcher asserts that promoting the continued use of the NELS: 88 dataset should be more encouraged, as it provides relevant and critical information by having a wave for 8th grade, a grade students are typically in the middle school in the U.S.

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Appendix A: Independent Composite Variable Matrix NELS: 88

Base Year Variables

dSPBY	dABY	dHACBY
BYS82B	BYS82E	BYS82H
Varsity Team Sports	Band/Orchestra	History Club
BYS82C	BYS82F	BYS82I
Intramural Sports	Chorus/Choir	Science Club
BYS82D	BYS82G	BYS82J
Cheerleading	Dance	Math Club
BYS83F	BYS82N	BYS82K
Non-School Sport	Drama Club	Foreign Language Club
		BYS82L
		Other Subject Matter Club
		BYS82M
		Debate or Speech Team
		BYS82O
		Academic Honor Society
		BYS82P
		Student Newspaper
		BYS82Q
		Student Yearbook
		BYS82R
		Student Council
		BYS82S
		Computer Club
		BYS82T
		Religious Organization
		BYS82U
		Vocational Ed. Club

Appendix A: Independent Composite Variable Matrix NELS: 88 (Cont.)

Second Wave Variables

dSPF1	dAF1	dHACF1
F1S41AA	F1S41BA	F1S41BC
Baseball/Softball	Band/Orchestra	Student Government
F1S41AB	F1S41BB	F1S41BD
Basketball	Play/Musical	Academic Honor Society
F1S41AC		F1S41BE
Football		Student Yearbook
F1S41AD		F1S41BF
Soccer		Service Club
F1S41AE		F1S41BG
Swim Team		Academic Club
F1S41AF		F1S41BH
Other Team		Hobby Club
F1S41AG		F1S41BI
Individual Sport		Vocational Ed. Club
F1S41AH		
Cheerleading		
F1S41AI		
Drill Team		

Third Wave Variables

dSPF2	dAF2	dHACF2
F2S30AA	F2S30BA	F2S30BD
Varsity Team Sport	Band	Academic Honor Society
F2S30AA	F2S30BB	F2S30BE
Individual Sport	Drama/Play/Musical	Student Yearbook
F2S30AC		F2S30BF
Cheerleading		Service Club
F2S30BJ		F2S30BG
Intramural Team		Academic Club
F2S30AA		F2S30BH
Intramural Individual		Hobby Club
		F2S30BI
		Vocational Ed. Club

Appendix B: Independent Composite Variable Matrix ELS: 2002

Base Year Variables

dSPBY	dABY	dHACBY
BYBASEBL	BYS39H	BYS41C
Baseball	Drill Team/Dance	Student Government
BYSOFTBL	BYS41A	BYS41D
Softball	Band/Chorus	Academic Honor Society
BYBSKTBL	BYS41B	BYS41E
Basketball	Play/Musical	Yearbook/Newspaper
BYFOOTBL		BYS41F
Football		Service Club
BYSOCCER		BYS41G
Soccer		Academic Club
BYTEAMSP		BYS41H
Other Team Sport		Hobby Club
BYSOLOSP		BYS41I
Individual Sport		Vocational Club
BYCHRDRL		
Cheerleading		
BYS39A		
Intramural Baseball		
BYS39B		
Intramural Softball		
BYS39C		
Intramural Basketball		
BYS39D		
Intramural Football		
BYS39E		
Intramural Soccer		
BYS39F		
Intramural Team Sport		
BYS39G		
Intramural Individual Sport		

Appendix B: Independent Composite Variable Matrix ELS: 2002 (Cont.)

Second Wave Variables

dSPBY	dABY	dHACBY
F1S26A Intramural Sports F1S26B Interscholastic Sports	F1S26C Band/Chorus F1S26D Play/Musical	F1S26E Student Government F1S26F Academic Honor Society F1S26G Yearbook/Newspaper F1S26H Service Club F1S26I Academic Club F1S26J Hobby Club F1S26K Vocational Club